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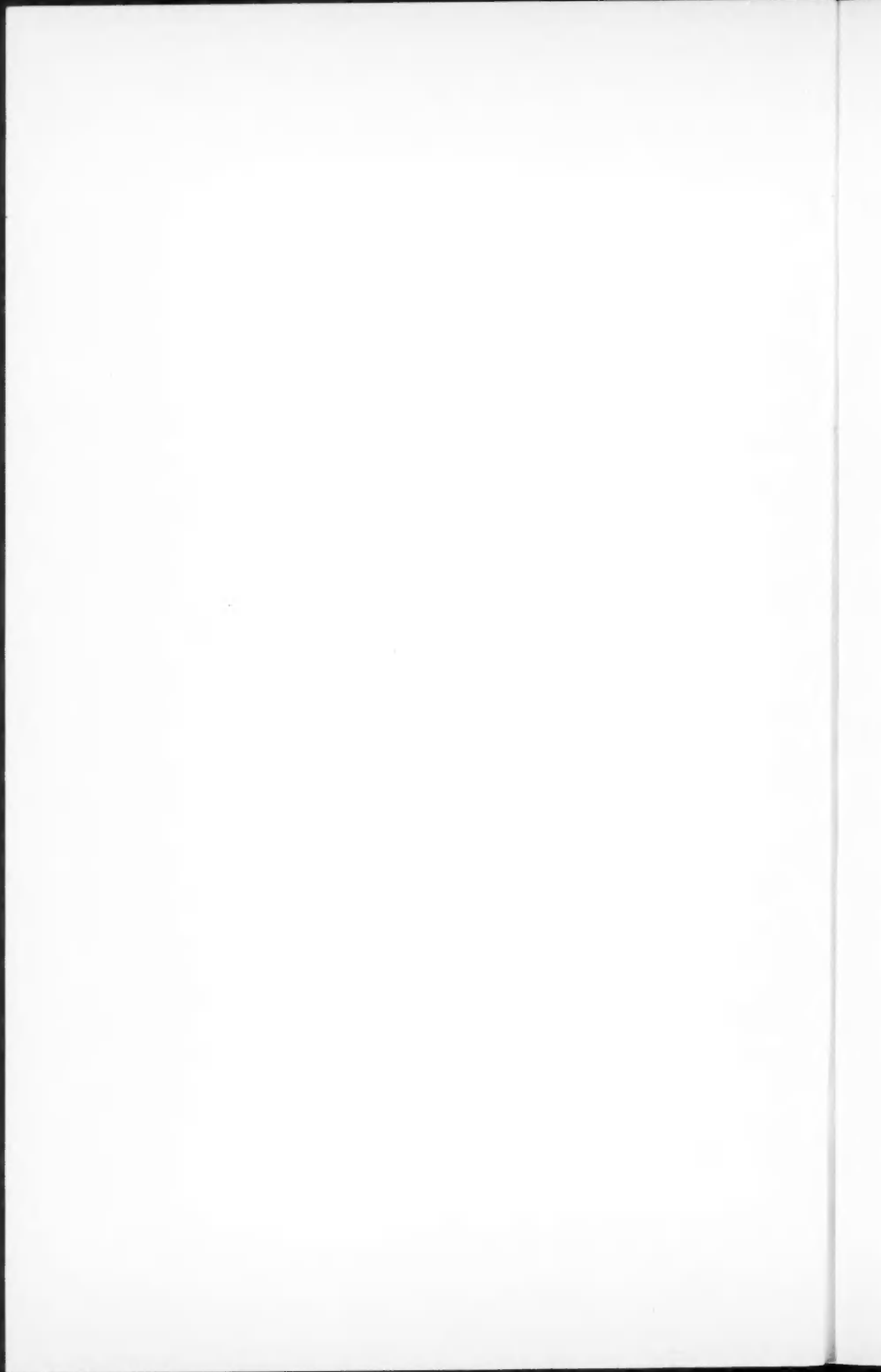
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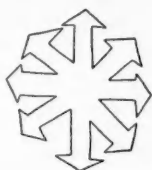
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THE SPIRIT OF PAGANISM

The antithesis between paganism and Christianity is usually resolved, in current opinion, into the theological antithesis between polytheism and monotheism. But a religious life means more than mere theology, and one has the right to ask oneself what is, in reality, the religious character of paganism.

Between polytheism and monotheism, the *enotheism* of Max Muller (and of F. W. J. Schelling) is not a mean term, and still less a moment of transition from one to the other, for the simple reason that it is situated on a different plane. In the fervour of prayer, under the impulse of devotion, the believer is so absorbed in the thought of the God he is adoring at that very moment—this is described as *enotheism*—that for him, at that moment, it is as if no other god existed. This will not prevent him, at another moment, from consecrating himself with equal fervour to the adoration of another god. The famous Egyptian hymn inspired by the religious ideas of Amenophis IV, and which invokes Aten, the Sun, as “sole God,” is just as far from true monotheism with its absolute negation of every divine being except the One, as are the Vedic hymns in which Indra is celebrated as the god “besides whom there are no others” (Rig-Veda, VI 21.10; cfr. I 81.5; 165.9; IV 30.1; VII 32.23).

The Spirit of Paganism

If we then extend the conception of paganism beyond the confines of the Greco-Roman world and its relations with Christianity, we find an Iranian polytheistic paganism which is opposed by the monotheistic religion of Zarathustra, and an Arab polytheistic paganism opposed by the monotheism of Islam. In the religious history of India, however, we see that, although the polytheistic Brahmanism is far more closely identified with paganism than is Buddhism, the latter is nevertheless not a monotheistic religion, and it does not deny the common divinities of the Vedic-brahmanistic tradition.

The historical connection between paganism and its supplanter, Christianity, accordingly transcends the historical connection between polytheism and monotheism. Polytheism is supplanted by monotheism, but paganism can also be supplanted by monotheism in a different and independent sense: once again we are faced with the proof that religion transcends theology.

The construction of a religious history of humanity in accordance with the line of development of the idea of God in the evolutionist thought of the nineteenth century was inadequate, both from the historical and the religious point of view. Polytheism and monotheism are not a succession of moments and necessary steps in a uniform and constant process of the human intellect; they are religious values. Monotheism is not the last term of an intellectual evolution, it is the fruit of a historically qualified religious revolution, which determines a new course for religious history. On its side, polytheism is not a theological error destined to be corrected once and for all by monotheism; it is a religious value which has been overcome, but not nullified, by monotheism, and which continues to live beside, and even in the bosom of, monotheism itself.

It is well known that the gods of Greco-Roman paganism did not entirely disappear with the advent of Christianity. This is not a question of the survival or revival of the pagan deities in figurative art, in poetry, and in general modern culture after the Renaissance.¹ What is of interest here is not constituted by the external values of the Greek and Roman deities, but by the religious values they continued, in one way or another, to represent even in the bosom of Christianity, and which, as a matter of fact, did not so much deny their existence as the quality of their gods. Incompatible as gods with the belief in an only God, they were not so as demons:

1. Cf. J. Seznec, *La survivance des dieux antiques*. Essay on the role of mythological tradition in Humanism and in the Art of the Renaissance (London, 1940), with the remarks of B. Croce, in *La Parola del Passato*, 1946, pp. 273-285. See also M. Simon, *Les Dieux antiques dans la pensée chrétienne* in *Zeitschrift für Religions- und Geistesgeschichte*, 1954, pp. 97-113.

"omnes dii gentium daemonia."² Jove, Venus, Mercury were for the ancient Christians not so much fantastic and fabulous figures as diabolical beings conquered and dethroned. The same treatment was given to the deities of the other pagan religions which Christianity encountered on its road of expansion in Europe and elsewhere. An ancient Gallic god, *Cernunnos*, the "Horned One," kept his horns on being transformed into the Devil of the religious Masques and of the sacred iconography of the Middle Ages. An ancient Celtic god with three heads became at first the Devil, but was later used to represent the Christian Trinity. Traces of an analogous process are to be found in Germanic paganism.³

The same degradation from the divine plane can also be verified outside Christianity. This is the case with the gods of Iranian paganism in regard to the religion of Zarathustra. In the language of the *Avesta*, the word *daiva* means "demon": but originally it had quite a different meaning, precisely that which the same word *deva* has in the Vedas (and that the word *deus* has in Latin), that is to say, "god." This inversion of meaning is due to the advent of Zoroastrian monotheism, in which there was evidently no place for the *daevas* of the traditional religion side by side with the one God, Ahura Mazda, and therefore the ancient "gods" were renounced as such, and degraded to the condition of demons in the train of Ahriman, the Arch-Demon, the Anti-God, the principle of evil. When, later, some of them, such as the (Indo-)Iranian (Mitra-)Mithra, were later readmitted to Zoroastrianism, they were no longer considered or venerated as gods (*baga*), but simply as *yazata*, or "adorable," in subordination to the one god Ahura Mazda.⁴

In any case, even in Buddhism the ancient pagan gods of the Brahmanic Vedism were retained, as we have pointed out, but they suffered a *de-minutio*, abandoning their transcendent position to be placed in the perpetual cycle of coming into being—as superior forms of existence, certainly—but subject to the universal law of pain, with no possibility of evasion other than that offered in the doctrine of the Buddha ("the monk superior to the gods").

2. Augustin., *Enarrat. in Psalm. CXV* (XCVI), 4-5: Migne, *Patrologia Latina*, Vol. XXXVII, p. 1231.

3. See my article: "The Pagan Origins of the Three-Headed Representation of the Christian Trinity," in the *Journal of the Warburg and Courtauld Institutes*, 1946, pp. 135-151.

4. In the trilingual inscription of Xerxes the term *daiva* is rendered in the Accadian text by *limnu* (*ilāni*), that is "the wicked (gods)." According to E. Herzfeld, "Xerxes' Verbot des Daiva-Cultes," in *Archeologische Mitteilungen aus Iran*, VIII (Berlin, 1937), 73 ff., the allusion is to the gods of the Iranian peoples of polytheistic religion not adhering to the monotheistic Zoroastrianism.

The Spirit of Paganism

With the transformation of the ancient gods into demons, in the context of Christianity, there is however an implicit religious estimation of paganism which, though later obscured in theological and lay thought, has never altogether disappeared and has been revived in our own day. We find it clearly formulated by a great Christian thinker, Gerardus van der Leeuw, as "The Reality of Heathendom," in *The Student World*, 1934, 292 ff. (here translated from the French version, published at the same time as the English version, in *Le Monde non-chrétien*).

In eloquent phrases, dictated by the strength of his feelings, van der Leeuw protests against the widespread opinion that the twilight and passing of paganism were facts of a purely intellectualistic order, "the victory of emancipated intelligence over error and stupidity." He decisively rejects the idea that the ancient gods were simply inventions and nothing more: "Neither the Israelites nor the Christians of Antiquity fell into this error. . . ." Paganism is not dead: "among the many things still living . . . in our epoch . . . we must count paganism." The pagan deities are still alive in their essential realities, even if their names evoke only shades. "To-day . . . it appears that we are surrounded by real powers, we affront them at every step, the power of blood and the power of death, the power of sex and the power of hunger, the power of the spoken word and the power of history, the power of the strong man and the power of power. . . . That the land which gave us birth is a power, Klages has declared to us in terms of a personal sensualism. . . . That death is a power, Freud has told us in a striking manner. . . ." It is not necessary that these powers should still be named Mars, Venus and Mercury. It is not necessary to go seeking for them, like the German neo-paganism, in the religious past of the Teutonic race. "The new paganism has still much to learn. But it exists, and its Gods exist. They have never died."

Paganism, then, is no passing moment in religious history, overcome once and for all in the West by the Christian religion. It is an immanent religious value, in perpetual antithesis to Christianity. What is its value? A negative one, in the opinion of van der Leeuw. "We shall not deny (we moderns, as did the ancient Christians) the existence of the pagan gods, on the contrary, we have to deal with them every day; but we know the commandment: Thou shalt not bow down to them, nor worship them." The "real powers" of blood, of sex, of death, are no longer called by their ancient names, but they are always those same powers which, worshipped by the pagans, were an abomination to the Christians. In the same way

as the ancient gods, whose names were Mars, Venus and Mercury were demons, so to-day, the "real powers" of pervading paganism are demoniacal, dethroned by the true God, but always living and always insurgent in man, who, being a Christian, must not deny their existence, but must abjure and combat them in the daily and everlasting contest which is true Christian life.

Paganism is, accordingly, for van der Leeuw, a religious value, but negative. It is natural to ask: is there not in this religious conception of paganism a residue of theological thought? Is there really nothing in paganism that has a positive religious value? "We have above all to learn that the essential characteristic of Christianity is not a conception, true or false, of the divinity, but simply and solely obedience to the God of our life." But even paganism was a form of religious life; and which God, then, in paganism, was "the God of our life"?

Zeus, Ares, Hermes, Aphrodite could be nothing other than demons to the Christians. From the theological point of view, they soon became, for the Greeks themselves, figures that were worse than absurd. But from a religious point of view they had a positive value, above all in the form of civic deities. Their cult gave a religious expression to the life of the *polis*, with its hopes and fears, its triumphs and its defeats. The chief difference between paganism and Christianity lies not so much in the different way of conceiving "the God of our life," as in the different orientation of religious life. Christianity has its eyes fixed on the other world; life on this earth has no value, or has only the secondary and passing values of preparation and trial; it does not merit being lived, but rather being lost, so that the other life, which is eternal, may be gained. A religion of salvation, Christianity desires to save each individual man for the next world. Our world is subordinated to that higher world, the State is subordinated to the Church, the *res publica* to the *civitas Dei*.

In paganism, on the contrary, religious life is concerned chiefly with this world.⁵ Pagan religion is principally cult, adoration in act, service rendered to the gods to receive from them in return the protection of the community. The salvation of the community, State, and nation, prevails above the salvation of individuals, and to them the individual must sacri-

5. With the exception of religions with secret mysterious rites of which I have recently written in: *Les Mystères grecs et les Religions mystériques de l'Antiquité*, in *Cahiers d'Histoire mondiale*, 1954.

The Spirit of Paganism

fice his own salvation. Thus even paganism is, in its own way, a religion of salvation and of sacrifice, although the object of value is of this world. Its emphasis on this world, which is the essential character of the pagan religion as compared with the other-worldliness of Christianity, is also its positive value, real and innate.

Paganism is not wholly demoniac. It is still alive in our day, not only in its negative "powers," but also in its real values. The religious life of the *polis*, the *res publica*, the State, did not stop with the advent of Christianity, but continued, assuming Christian forms when Christianity became the state religion. There was no place in Christian monotheism for the civic deities. But in the cult of the patron saints of the city, the country, the nation, monotheism continued to express in popular forms the religious life of these orders. The saints were once again "the successors of the gods." The religious history of the Middle Ages and of the modern age, on the political plane, with its centuries of struggle between Papacy and Empire, between State and Church, is for the most part, and under the common Christian regime, the history of the interferences and compromises between the religion of this world, with its pagan origins, and the religion of the other world announced by the Gospels. Laicism deduced itself by supposing it could win on the political plane by abdication in favour of the Church on the religious plane; but the French Revolution venerated France in the cult of the Goddess Reason.

In the East, paganism, as the religious expression of the State's national and political life, has lived and continues to live in our day, side by side with the more recently introduced supra-national religions of individual salvation. In Asia, Buddhism, like Christianity a religion of supra-national tendency, did not destroy, as Christianity had done in the West, the national religions of "pagan" type encountered in its path.⁶ In China, the very ancient religious structure of the feudal and imperial state has lasted, in its Confucian systematization, up to our own times (at least until the advent of communism). In Japan, the traditional religion, Shintoism, with its pagan religious ideal of unconditional sacrifice for the native land and absolute devotion to the Sovereign, is still alive in the popular conscience, even after the defeat of the "Divine Sovereign" and the foreign occupation of the "Sacred Land." It is true that, towards the end of the last centu-

6. See the article "East and West" in my *Essays on the History of Religions* (Leiden, Brill, 1954).

ry, Shintoism was defined by the Japanese Government as a "non-religion." This, however, merely served to exalt its religious value in the popular conscience, by preserving for it that obligatory character which it would have lost, had it remained on an equal footing with the other religions, which were declared optional in virtue of the equality of all cults proclaimed by the Japanese Constitution of 1889 following the example of the lay states of the West.⁷

7. R. Pettazzoni, *La Mitologia Giapponese*, Introduction (Bologna, 1929).

THE HUMAN RECORD

Anthropology, as it developed in the latter part of the last century, took as its central, if not sole, field of interest the attempt to discover and explain human progress from the emergence of man before the Ice Age many millennia ago down to the complex life of civilised peoples in the modern world. It sought not only to range both living races and fossil remains of extinct forms in a succession of advancing forms, but to formulate broad sequences of discovery and invention by which new crafts and ways of life developed, and to trace the birth and development of cosmological, religious and moral ideas, and the elaboration of social institutions from the family to the state.

Such a programme was not new. It had been the subject of considerable speculation in classical thought and of more critical elaboration by the rationalist philosophers of the eighteenth century, who shared Hume's view that the history of mankind had been one of "gradual improvement from rude beginnings to a state of greater perfection." The nineteenth century anthropologists had, however, the great advantage of being able to set their studies within the wider framework of the considerable geological and archaeological knowledge that was then accumulating and of the theories concerning biological evolution that were then being elaborated.

The essential postulates of these biological hypotheses were that there

was an inherent propensity for variation among the offsprings of any organism, so that minute differences among the descendants were continually occurring, giving rise to new varieties, and also that any and every form of living organism was subject to selection, that is, to preservation and increase or ultimate extinction according to its success in the biological environment in which it found itself. Such ideas were obviously suggestive for understanding not only the biological evolution of man, but also the successive development of crafts, ideas and social institutions of increasing complexity and specialisation in human societies. The early anthropologists accordingly viewed particular cultural features and social institutions as patterns of human behaviour, the distinctive character of which had been built up by a long succession of small changes and adapted by selection to particular conditions of life. They regarded the maintenance of any particular socio-cultural pattern as dependent on adequate adaptation to human needs and the material environment and its capacity to withstand the pressure of other better equipped peoples.

But, encouraged by the success of evolutionary theory in biology in the interpretation of the growing body of fossil evidence concerning the emergence, proliferation and extinction of various species and genera at successive periods of the earth's history, they were also led to attempt formulations, analogous with those of the evolution of life forms, concerning main phases of the cultural and social evolution of man. The fragmentary character of the ethnographic and archaeological data then available was, however, a considerable handicap and also a temptation to speculation. Here, moreover, the new biological doctrines were often misconceived and misapplied. The doctrine of biological evolution by variation and selection placed great stress on progressive diversification among living organisms, and hence on the multiplicity of forms and species that were derived from a common ancestry. But the early anthropologists tended merely to borrow the biological notion of progressive elaboration of living forms in certain lines and apply it universally and speculatively to cultural and social changes through time, thus arriving at oversimplified schemes of unilinear evolution held to be applicable to mankind at large.

The processes of development in crafts, economic life, government, and beliefs all tended to be oversimplified in this way. For each a succession of more or less fixed stages was postulated—stages through which any and every human group, unless retarded by adverse circumstances, would pass. Man, beginning as a hunter, tamed his game and became a pastoralist; this stage in turn was superseded by a more productive agriculture. A

promiscuously interbreeding human horde gave rise to a universal system of intermarrying clans, from which by slow degrees the monogamous family emerged. Initially perceiving the universe as manipulated by mysterious forces, man devised magic rites to control them until, conceiving of divine personages in his own image, he rejected magic and developed religion, which progresses towards monotheism until, in the view of some, it is superseded by modern science.

Such abstract stages, unlike palaeontological phases such as the "Age of Reptiles," which they sought to imitate, had no location in the space-time of an actual evolutionary process based throughout on actual cultures of the past. Plausibility was given to them only by selecting isolated crafts, customs and beliefs, and social institutions from particular peoples past and present and claiming these as indications and examples of such stages in an upward progress from savagery through barbarism to civilisation.

Such views and the schemes of "evolutionary stages" in which they were expressed obtained a wide vogue and are indeed still regarded in some quarters as definitive anthropological findings. But they often retarded and distorted ethnographic study by encouraging investigators among particular peoples to seek only for illustration and confirmation of preconceived schemes, and later progress of ethnography and archaeology provided increasing evidence of the diversity of cultural and social types, the inadequacies of such over-simplified formulations becoming increasingly apparent. The consequent attack on notions of unilineal evolutionary stages in the development of culture and society often failed to discriminate, unfortunately, between these theories and the concept of evolution in its true sense. The latter is the hypothesis of the successive emergence, radiation and dominance of increasingly complex cultural and social patterns as a result of the continuous action of such basic processes as the tendency for variation in human behaviour and the acceptance and widespread imitation of innovations that prove adaptive and productive for individuals and groups in given material and socio-cultural environments.

The attention of many ethnologists over the past fifty years has been largely devoted to the task of demolishing concepts of simple evolutionary stages. But in so doing, some have been led into a denial not only of any relevance for evolutionary concepts but also of the value of any attempt to analyse and formulate general principles with reference to the progressive elaboration of cultural patterns and social organisation that is a matter of record for the history of *Homo sapiens*. This has even led some anthropologists into a cultural relativism which has confused subjective value judg-

ments with objective criteria of socio-cultural differentiation. This has been carried to the point at which such ethical and political questions as to whether western peoples ought to dominate, displace or otherwise affect the lives of primitive peoples, are confused with questions as to whether and in what ways any given cultural and social patterns are, on the basis of relevant extrinsic criteria, more complex, more productive and more viable than others.

Meanwhile, however, archaeological and ethnographic researches over the last two generations have greatly extended our knowledge of the actual cultural history of man and of the varieties of cultural patterns and social organisation among different peoples, past and present. It has therefore become more feasible as well as more important to attempt, on the wider empirical foundations that are now available, a reconsideration of the general character of the cultural record of mankind and of the general processes of development that are to be discerned. For contemporary thought, including discussions of the *raison d'être* and the future of industrial civilisation itself, such a review has a particular interest. In terms of the total history of man, which can reasonably be given a span of some five hundred thousand years, the period of conventional history, the last two thousand years, from the beginnings of the Graeco-Roman unification of the Mediterranean world to the present early phase of social adjustment to large scale industrialism, is but the latest chapter in a far from finished story. The general trend is better seen in a consideration, however summary, of the total record, than in a minute scanning of the most recent entry.

The results of three generations of systematic archaeological and ethnographic research show that in a manner somewhat analogous to the successive radiations of new biological forms, new and more complex cultural patterns have emerged dramatically at certain periods, expanding and at the same time diversifying to embrace larger segments of a growing world population. Needless to say, the archaeological character of the data relating to earlier periods sets limits to the kind of knowledge we may gain. More precise and far-reaching conclusions and comparisons are possible in such fields as technology, economy and art, than in the spheres of belief, morals and social organisation, for archaeological, unlike documentary or ethnographic materials, can only rarely provide direct information concerning ideas or social relations. But this parallels the situation with regard to palaeontological information available for the study of biological evolution, and, as in that case, when the data are appraised thor-

oughly and critically in the light of direct knowledge of processes in living forms, significant, if limited, inferences can be reached despite the fragmentary and selective character of the material.

For the reconstruction of the earlier cultural history of mankind, the dating of traces of extinct cultures is vitally important, and systems of relative chronology have been worked out by various methods. These are based on correlations with geological horizons for the more remote periods. Fluorine content affords an index of the age of fossil bone. The stratification of material in occupied sites and the associations and overlaps of typological sequences of artifacts in different sites and regions are available for later periods. Absolute dating has, however, presented greater difficulties. In the Ancient East it has been possible for over a generation to estimate the antiquity of the neolithic and later prehistoric phases by working back from the oldest documents that can be linked to calendrical records, and the main phases of the prehistory of Europe have been approximately correlated in this way back to c. 3000 B.C. In the arid areas of the southwestern United States it has been found possible by dendrochronology—the matching of overlapping annual growth rings on tree trunks out for building in prehistoric times—to establish absolute dates in our calendar extending back to the beginning of the Christian era.

But the most dramatic possibilities have emerged only recently with the development, by W. F. Libby and others, since 1950, of a method of dating organic archaeological remains by the measurement of the radioactivity of their carbon content. This promises to provide a means for securing an absolute chronology for prehistoric cultures extending back as far as twenty-five thousand years—the limit of the radioactive cycle of carbon 14. It depends on a reasonable hypothesis that the radioactive carbon 14 that is continuously formed in the upper atmosphere has remained constant everywhere and that the proportion of carbon 14 particles taken up by living matter has been likewise constant. At death, living matter begins to lose its radioactive carbon at a steady rate so that the residual radioactivity of an archaeological specimen of organic origin, such as wood or bone or fibre, affords a measure of the antiquity of the artifact. This method, dependent as it is on the life of the carbon 14 isotope, is limited to an antiquity of about twenty-five thousand years or the later part of the Upper Palaeolithic in Europe. It is also subject, by current techniques of estimation, to a statistical error of several centuries, but this is small for the more remote periods in comparison with the guesswork

of estimates by earlier methods. While the carbon 14 methods is still experimental and problems of the contamination of specimens remain, tests on more recent objects already dated by other means have given remarkably exact results within the anticipated margins of error. The method is already being applied extensively in the New World, where the prehistoric chronology had for most areas been highly conjectural, and has yielded remarkable and often surprising but, on the whole, consistent results. A most important point is that as it is applied more widely, it will make it possible to link together on a common and absolute scale, the cultural successions in different regions as worked out by the field archaeologists and so establish the comparative chronology of prehistoric cultures throughout the world with a considerable degree of certainty.

The widespread existence of human populations in the Old World during the Pleistocene Ice Age was first established barely a century ago by the geological dating of chipped stone tools, that afforded cutting instruments for early men. Fossil remains of man, however, are generally few and isolated for the earlier periods, so that despite great advances in our knowledge of the variety of early Pleistocene (Lower Palaeolithic) cultures, attempts at correlation of the early stone-age cultures with particular species of *Homo* remain speculative. Knowledge of the distribution of man and of the development of human cultures during the Pleistocene, formerly confined to western Europe, has, however, been greatly extended by the researches of the last generation.

Throughout the long Lower Palaeolithic phase which probably extended over hundreds of thousands of years and persisted in Europe until the third retreat of the Northern and Alpine ice sheets, two distinct basic techniques for flaking and shaping stone implements persisted and are known to have extended over wide areas from Central Asia and India to Southern Africa and Europe. The characteristic tools of these two distinct traditions, known in their classic forms as the so-called hand axe (a bi-face or core tool of the Abbevillian-Acheulian tradition) and the Levallois flake, a thinner ovoid tool of which a series could be successively struck from a specially prepared nodule, may have originally been developed and diffused among distinct populations, for the Levallois flake has a more northern, and the hand axe a more southern distribution in Eurasia. But there is increasing evidence that both these techniques and tool types were included in the repertoire of some early groups, while other early and distinct traditions in the making of stone tools have been discovered, such

The Human Record

as the Lower Pleistocene Kafuan-Oldowan pebble tools of East Africa, the early pebble-axe chopping tools of southeast Asia, and the Clactonian flakes of northwest Europe.

Of the human fossils at present known as belonging to the Lower Palaeolithic, none are of *Homo sapiens* type and in all there are anatomical indications that their brains were inferior in development. On the other hand, there is some evidence, such as ritual burials, that these individuals possessed the distinctively human capacity for symbolisation and probably speech. The Neanderthal species of *Homo*, the first for which a specific and associated cultural equipment can be fully established, occupied Europe and parts of southwest Asia before and during the early part of the last glacial advance, the Wurmian, in Europe, using stone tools of forms derived from several Lower Palaeolithic traditions. In Europe Neanderthal Man appears to have been completely displaced early in the Wurm glaciation by *Homo sapiens*, who arrived there for the first time equipped with stone tools of new types.

The Upper Palaeolithic industries which appear with modern man in Europe during the last period of glaciation at the end of the Pleistocene, but may well be older in regions to the south and east, show considerable technical advance in manufacture and a greater specialization of forms. Many of the tools were intended not for direct use, but for the manufacture of other implements in bone, ivory and wood. Missile weapons were important, as is shown by the use of the spear thrower and the bow, for neither of which is there any evidence in Lower Palaeolithic remains. Advance in skill and organisation in hunting, and the addition of fishing to the economy, permitted larger communities and the more continuous occupation of dwelling sites. While the Lower Palaeolithic phase in Europe was immensely long enduring, a conservative geological estimate allows some four hundred thousand years, the Upper Palaeolithic and the post-glacial Mesolithic food-gathering cultures of Neanthropic man, *Homo sapiens*, although they cover by far the greater part of the history of our species, lasted, on a generous estimate, for less than one hundred thousand years, before they began to be supplemented by the cultivation of plants and the domestication of animals.

Although there is considerable evidence that the new "blade" and "graver" tools of the Upper Palaeolithic in Europe were introduced from elsewhere by several Neanthropic immigrations, clear indications of the sources both of the new tool forms and of *Homo sapiens* await further advances in the archaeology of other regions. In Europe and adjacent areas

where it is best known, the Upper Palaeolithic phase was, however, a period not only of notable cultural innovation, but also of increased regional specialisation. Distinct "races" of *Homo sapiens* type developed a variety of stone blade and bone tools and various local cultures emerge. The well-known Magdalenian of west-central Europe, with which the later cave paintings of France and northern Spain are associated, was but one of the last of these. Contemporaneous with them, but with distinct repertoires of tools, were the Hamburgians in North Germany and the Creswellians in England. Other blade and, later, microlithic industries have also been recognised in northern, eastern and southern Africa during the Upper Pleistocene, and the manner of their development from Lower Palaeolithic flake tools is suggested. But the elucidation of their chronological and possible cultural relations with the industries of Upper Palaeolithic Europe await further research. But, although the archaeological record is very fragmentary outside Europe, it is clear that *Homo sapiens* had spread in a number of varieties throughout the Old World by the end of the Pleistocene and that both Australia and the New World had been reached. The later Palaeolithic cultures everywhere show considerable local variety suggesting both a wealth of innovation, new adjustments to local conditions with a continual, if limited, expansion and migration of successful groups.

Co-operation among geologists, palaeobotanists and archaeologists has also succeeded in establishing in remarkable detail the character and the environmental context of the sequence of innovating cultures which developed in the forests and along the shores and lakes of northwestern Europe in the immediate post-glacial period after about twelve thousand B.C. Artifacts of wood such as canoes, paddles and traps, and later pottery, have been preserved to give a fuller picture of the ecological adaptations of these populations to this new environment.

It was only some six or eight thousand years ago that the foraging, hunting and fishing economies to which all known human communities had hitherto been confined were effectively supplemented for the first time in the Old World by the development of grain cultivation and stock breeding in the seasonally watered and lightly wooded grasslands east of the Mediterranean. Although an example of a proto-agricultural community is known in the Natufian of Palestine, the details of the processes and conditions whereby these momentous innovations were established, which made still larger and more stable human communities possible, remains to be discovered. But it is clear that within a thousand years grain

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growing and the raising of stock spread widely over western Asia, and into Europe. This culture was generally associated with the manufacture and use of ground—as distinct from chipped stone tools, and has become known as the Neolithic phase. Although the initial stages in the cultivation of wheat, barley and later millet or of the domestication of pigs, sheep and cattle have not yet been identified, the character of the early Neolithic economy and its cultural settings, over a wide range of varying habitats from the Iranian Plateau to the English Downs, are fairly well-known as a result of excavations and comparative studies carried out over the past twenty-five years.

Early Neolithic communities were small populations of twenty to thirty households generally dependent on shifting cultivation to maintain their grain harvests. But unlike the hunting economies of Palaeolithic and Mesolithic man, a food surplus was increasingly possible in some environments, which permitted not only the growth and proliferation of communities, but the release of energy for other activities, including new crafts. Hand-made pottery, weaving of simple textiles (usually in flax) and more elaborate dwellings and other structures, were generally adopted. This Neolithic economy practised by the enlarged semi-sedentary communities to which it gave rise, early extended along North Africa and up the Nile valley to the Sudan. By sea it was early carried to the islands of the Mediterranean. It was successfully introduced and adapted to new vegetational conditions in the wood lands of central and western Europe. While this rapid expansion resulted in large measure from the continual hiving off of segments of expanding communities to new areas, there is also evidence in Europe of the diffusion of neolithic crafts to the Mesolithic aborigines of the areas newly colonised. Archaeological evidence for an early extension into eastern Asia is generally lacking, although the early prehistoric painted pottery of North China where there were already primitive agricultural communities some five thousand years ago, may prove to be related to the early neolithic wares of southwest Asia.

Despite the clear evidence of an initial formation of the assemblage of neolithic crafts in the Middle East and its widespread diffusion from this region, it is by no means definitively established that this was the only region in which men independently developed primitive cultivation and a settled life in the Old World. Biological evidence, notably the genetics of domesticated plants and animals, and the existence of distinct techniques of cultivation, suggest that there was an early development of root cultivation and the rearing of pigs and chickens in southeast Asia. Whether this

development was independent or touched off by stimulus diffusion ultimately derived from the Middle East but without the actual transmission of western cereals and stock, will remain uncertain until the age and context of these southeast Asiatic developments are determined through future progress in archaeological research.

It was, however, in the Middle East again, facilitated it would seem by the devising of a more productive system of irrigation agriculture and the larger scale of social organisation which this demanded, that still greater technical advances followed in rapid succession over the next 2,000 years. New crafts including the smelting of copper and the manufacture of bronze for cutting tools, the use of wheeled vehicles and the plough, led to an increasing specialisation of labour, a more extensive system of exchange and progressive increases in the scale and the degree of centralisation of society. This gave rise to the succession of city states and later empires of the Ancient East from the third millennium B.C. in the wide zone from the Nile to the Indus. Deriving their food supplies by plough cultivation of cereals and other crops, and equipped with increasingly specialised tools, utensils and ornaments by highly skilled artisans, they developed a complex organization of exchange and written records under systems of centralised government. By one thousand B.C. the manufacture of iron, which for the first time provided an abundant material for cutting tools and manufactures of many kinds, had been generally adopted.

Some of the crafts of these urban civilisations of the Ancient East were early and progressively introduced to the surrounding "provincial" peoples still living in small separate communities, whose cultures were thereby enriched and specialised in various ways and their social organisation correspondingly elaborated. This process has been closely studied in Europe, where from two thousand B.C. the complex cultures of the European Bronze and Iron Ages were developed. On these foundations, the classical civilisations were later developed in the Mediterranean, while in eastern Asia, influence of the higher civilisations of the Ancient East were probably strong. The establishment of bronze manufacture in Shang times in North China coincided with the predominance of wheat, a western plant, as the food staple there, and the adoption of many other west Asiatic elements which provided the technical foundations for the development of the early state system of China.

Meanwhile, pastoral nomadism, developed by marginal peoples in southwestern and central Asia as a specialised economy, and providing horsemen of high mobility, made possible remarkable, if short-lived,

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militaristic organisations on a large scale. This equestrian pastoral economy and the striking specialisation of techniques and tribal organisation to which it gave rise, and which so vividly impressed classical writers, was regarded by many of the older evolutionists as a second stage in the development of human economies which developed from hunting and preceded agriculture. But it is now clearly to be seen as a late development that derived not only its livestock, especially cattle and sheep, but also its essential means of mobility, horse riding, and still later the pack camel, from the older centres of sedentary civilisation. Equestrianism, which belatedly followed chariot driving in the Ancient East around 1500 B.C., appears to have become general in the outer grasslands by the beginning of the first millennium B.C. It provided for the first time the human mobility prerequisite on the steppes for extensive seasonal migrations and access for trade or tribute to the settled areas at the margins. A more rewarding life than hazardous farming along seasonal streams or hunting in the wooded lands to the north became possible and, by its means, Scythians, Tartars, Huns and Turks successively dominated for centuries large areas of the Eurasiatic grasslands and their margins. It appears from recent archaeological research that a similar process, reproduced on a smaller scale, occurred over two thousand years later in the New World, when the horses of the Spaniards and the French became available to the Indians on the margins of the Great Plains of North America.

The outlines of the early cultural history of Eurasia are sufficiently clear to show how a succession of discoveries and inventions made in different, but interconnected centres, gave a progressively greater control over natural and human resources which diffused to other regions and everywhere resulted in both a growing complexity of cultural apparatus and an increasing scale of differentiation of social organisation. Despite the setbacks or stagnation of some peoples, there were always centres of advance and the cultures of the multiplying human societies were continually diversifying. This record also confirms the 19th century hypothesis that savagery (food-gathering), barbarism (non-literate primitive cultivators) and civilisation (literate societies organised in states with specialised occupations and a hierarchical structure) were consecutive stages in the socio-cultural history of the Old World. On the other hand, it equally refutes any idea that there has been an inevitable tendency for all peoples to pass autonomously and successively through such stages. The developments have depended on specific discoveries and their application and combination in a few major centres of innovation.

In tropical Africa, archaeological research is in its infancy and the ethnographic record there is also very incomplete. But there are no indications that the early Neolithic complex of the Ancient East was able to breach the Sahara and there is so far no evidence of an early phase of trans-Saharan "Bronze Age" cultures. On the other hand, millet cultivation and the rearing of small stock and later cattle, probably derived from southwest Asia, afforded an early basis for sedentary and expanding populations in the Ethiopian highland zone whence various elements expanded westward and southward over the tropical grasslands of the Sudan and East Africa. Meanwhile, south Asiatic food plants, of which the yam and the banana were outstanding, were also introduced into eastern Africa and carried westwards to provide the staples for the development of agricultural communities in the Congo-Guinea forest zone. The rearing of large cattle, which led to the development of predominantly pastoral communities in eastern Africa and the western Sudan, appear to have depended on later influences from the north.

At the time of tropical Africa's discovery by the Europeans, nearly all its agricultural peoples had iron tools and the technique of iron smelting was widespread. The periods and contacts by which this craft first penetrated remains unknown. But hunting peoples survived until a few centuries ago over considerable areas in eastern and southern Africa and the forests of the Congo basin. Indeed, the expansion of agricultural and pastoral tribes at their expense was far from complete at the time of the first European penetration. The Bushmen of southern Africa, who were then being driven back by the expanding southern Bantu cattle-keeping peoples, still retained a mesolithic equipment and economy.

Thus, although the Sahara appears to have interposed a considerable obstacle and cultural filter between Tropical Africa and the north, there are many indications of recurrent influences from the later civilisations of the Ancient East and the Classical Mediterranean on the population of its southern flanks in eastern and western Sudan. These were probably intensified after the introduction of the camel into North Africa around four hundred A.D., which afforded a means of desert transport, and contributed to the development of large centralised states in this zone, that were already well established early in the Christian era and prior to the spread of Islam. The extent of pre-Islamic maritime contacts from the north down the eastern coasts of Africa also remain to be explored. But beyond the Sudan, the cultural impact of the higher civilisations of the Middle East and the Mediterranean appears to have been of low intensity,

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and such crafts and ideas as undoubtedly reached its peoples from outside were adapted and refashioned in relation to local developments. It is only in the large detached island of Madagascar that, in the Indonesian speech and many cultural features of the Malagassy, there is clear evidence of any overseas colonisation and the abrupt introduction of a new cultural pattern.

Beyond the mainland of southeast Asia, human populations are likely to have already colonised New Guinea, Australia and Melanesia in the late Pleistocene and there is evidence that several distinct racial stocks were involved. But the archaeological knowledge needed to determine the periods and phases of such movements is thus far lacking. While, however, many of the east Asiatic food plants and animals were later carried through New Guinea and Melanesia, they were never established in Australia, where an archaic hunting economy using the spear thrower, but not the bow, persisted into modern times. It is unlikely that the northern coasts of Australia remained unvisited by technically more advanced peoples from Papuo-Melanesia, and some north Australian coast craft point to such contacts. But these appear to have resulted in little cultural transmission. The orderly patterning of relations between kin both within and between the small hunting hordes and the elaboration of tribal rituals in Australia suggests that this may in part have been due to a long established cultural orientation that was resistant to the adoption of new crafts or modes of organisation in the absence of substantial colonisation.

The outer archipelagos of Oceania, in Micronesia and Polynesia, may not have been colonised by man much before the beginning of the Christian era, when a complex series of movements by sea, which appear to have derived ultimately from advanced cultures in Indonesia, began. southeast Asia is certainly the source of the Austronesian languages of Oceania, which are also found over much of New Guinea and Melanesia where some migrants are likely to have remained. The limitations of oceanic canoe transport and of the resources of the islands themselves are generally invoked to account for the technical simplicity of the Micronesian and Polynesian cultures, which were nevertheless characterised by features of social organisation, ritual, and religious ideas that suggest reduced and refashioned versions of southeast Asiatic patterns of rank and ceremonial. Subsequent contacts between Polynesia and the New World may have occurred, and migrations into the Pacific from the northwest coast of America, which was itself probably affected by late migrants from

east Asia, have been claimed on the basis of some similarities in art style. Heyerdahl's drift voyage on an Inca-type raft from Peru to the Tuamotus has also strengthened the probability of the occasional but perhaps always involuntary arrival of migrants from centres of higher civilisation in South America. Such contacts, however, like the original oceanic migrations eastwards from the Asiatic mainland, appear to have been only sporadic; while, within Oceania, after the great dispersion of the Polynesians, the several islands and island groups for the most part lost contact with the outside world.

Geologically speaking, man appeared only recently in the New World. No evidence exists there of any extinct form of *Homo*, and *Homo sapiens* was clearly an immigrant from the Old World. The limitations imposed by the configuration of the continents restricted any early route of entry to the regions of the Bering Strait and, in the absence of any stone tools resembling in form Palaeolithic industries of the Old World, it was long argued that man arrived only in the Recent, i.e. Postglacial, geological period, and perhaps as recently as five or six thousand years ago. But both the antiquity and the number of human movements into the Western Hemisphere now seem likely to have been greater than was formerly thought. Human artifacts which must be dated to at least the later parts of the Ice Age have, during the past twenty-five years, been recognised over wide areas. By then the High Plains of North America, to the east of the Rockies, were occupied, as is shown by specialised but widespread stone spearheads, known as the Folsom points, by peoples hunting now extinct species of bison, mammoth, horse and giant sloth. One Folsom site has been found, by a carbon 14 dating of associated bones, to be about twenty thousand years old. A heavier and rougher but apparently related type of spear point known as Clovis, which has been established stratigraphically as older at one site, has been recorded from areas as widely dispersed as Alaska, Georgia, and Costa Rica. Other tool types more reminiscent of some Old World Middle and Upper Palaeolithic types, have also been identified and simple bone tools have been recorded from a number of sites. From Central Mexico come tools which are held to resemble the Lower Palaeolithic pebble axes of eastern Asia. With such forms is associated a fossil human skeleton, the Tepexpan Man, now claimed to be eleven thousand to sixteen thousand years old on carbon 14 dating. There are, therefore, likely to have been several Palaeolithic migrations of groups of *Homo sapiens* into the New World, facilitated no doubt by the fact

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that the Asiatic temperate fauna, which could provide game, reached North America by way of the Bering Strait during some phases of the Pleistocene, when there were long periods of mild climate and lowered sea levels to provide a land bridge. Too little is yet known of the Palaeolithic cultures of northeast Asia to attempt to characterise or date such movements.

In early postglacial times, chipped stone tools of different styles, including the widespread Yuma type of spearhead, which is found as far south as Central Mexico, were used by hunting peoples, whose equipment shows further advances such as bone needles. Then, still later, from some time after about five thousand B.C., a wide range of new devices appears over wide areas in North America. These, by their character and distribution, suggest further migrations from northern Asia, for this "Archaic" Forest culture of the New World corresponds in many of its techniques and adaptive features, though not in its detailed forms, with that of the Mesolithic fishing and woodworking peoples of northern Europe. It includes specialised projectile points, a variety of polished stone tools likely to have been used especially for woodworking and betokening a more sedentary coastal or riverine pattern of life with a considerable increase of population. Variants spread down the Pacific coastlands in the west and across and down the forests of northern and eastern America. In the northern forests the culture persisted without substantial modification, until a further and complex series of impulses from northeastern Asia during the last thousand years B.C. gave rise to the first Arctic Whaling and later Eskimo cultures. But as it spread south, this Archaic fishing and hunting culture was greatly diversified and in the eastern forests of North America there were successive advances in technical equipment permitting greater density of population and size of communities. The use of pottery had developed among the resulting "Early Woodland" cultures somewhere between two thousand and one thousand B.C., and thence spread westward into the Plains. By the latter date maize cultivation had reached it from the south, coming ultimately from middle America. Thence, too, later influences stimulated elaborate rituals and the growth of larger centres of population in what is now the southeastern United States. In the more arid and open country of the southwestern interior of North America, which had probably been unoccupied during a previous desertic phase, a primitive form of maize reached the sparse hunting and foraging peoples before one thousand B.C., according to recent carbon 14 datings, to give rise to the earliest Mogollan farming communities in the central and southern parts

of what are now New Mexico and Arizona. A superior type of maize, together with potmaking in styles derived from Central Mexico, were not established there until around two hundred B.C., following which, during the first millennium A.D., village life developed in a series of diversified cultures of the Southwest, that were ancestral to the historic Pueblos.

Meanwhile, more complex cultures had developed in the tropical highlands to the south. The context and chronology of these great advances in middle America still bristle with unsolved problems to which increasingly elaborate techniques of analysis and field study are being devoted; but the broad character and phases of development have been established. Sedentary life in small agricultural communities had become widespread over the great area extending from central Mexico to western Peru well before the beginning of the first millennium B.C. Nearly everywhere this was founded on the cultivation of primitive forms of maize, beans and cotton, to which many other plants were added later in different areas. Pottery, too, soon became universal. The location and character of successive advances are for the most part still uncertain, but they were advances within a single cultural continuum whereby, through processes of diffusion, intermingling and combination of successive discoveries and crafts, a widespread neolithic village economy with varying regional peculiarities of invention and style was established. These differences in style and emphases persisted in the later developments when around one thousand B.C., over two thousand years later than in the Ancient East of the Old World, several more complex civilizations were gradually built up in central and southern Mexico and in western Peru. In the former, the Maya and Teotihuacan civilisations had emerged by one thousand A.D., with their specialised handicrafts, monumental temples, elaborate ceremonialism, calendrical systems and glyph writing, while the separate and distinctive, but equally complex, Chavin and Tiahuanco civilisations had developed successively in highland Peru and provided the foundations on which the widespread Inca Empire of the fourteenth century was based. Despite the advanced skills in many spheres, the development of large urban populations and the organisation of wide territories comparable with the empires of the Ancient East appear to have been hampered in the New World by the lack of domestic animals for traction and transport, which restricted production, the movement of supplies and swift communications. The Inca, seeking under these difficulties to control the wide areas they conquered, were compelled to devise an extremely rigid social organisation to compensate for technical limitations.

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There is, so far, no clear evidence of specific derivations from the Old World cultures in the earlier developments of agricultural communities in Middle America, although there is still a baffling problem concerning the origins of cotton, on which geneticists differ, and, as the complexity of the genetic history of maize has become more apparent, there have been claims for a southeast Asiatic source for its primitive form. Sporadic trans-Pacific connections between Old and New World cultures in the later phases is more probable, since there is not only a strong evidence that certain food plants spread across the Pacific from the New World in pre-Columbian times, but there are certain elements in, for example, the art style and ceremonial of the late Maya that resemble contemporary southeast Asiatic forms. Within the New World, however, the widespread and crucial effects of the diffusion of crafts, beliefs and ritual patterns from Middle America over surrounding regions are patent. In North America the cultivation of maize, beans, squashes and cotton spread northwards almost to their climatic limits save where desert mountains shut off central California. These cultivated plants provided the foundation for sedentary populations in the Southwest and facilitated the further development of the Eastern Woodland cultures in the east. Southwards, these same plants were also extended through most of the vast tropical forest areas of the Amazon and Chaco, although maize did not generally supersede the root crop, cassava, which may have been brought independently into cultivation as the staple of small village communities in the tropical forests. The southern grasslands of the New World were not, however, opened to agriculture and remained in the occupation of nomadic hunting peoples until European conquest.

A review such as this of the cultural history of man in its broadest aspects serves to demonstrate the essential fluidity of cultural patterning that springs from the human capacity for innovation, communication and learning. The cultural assemblage of any human group, however large or small, however "primitive" or "advanced," is not a simple product of internal development in response to local conditions, for its elements were, in a large measure, derived from a multiplicity of contacts and transmissions over long periods of time. The local and internal development has been one of selection and mutation. In this sense, but in this sense alone, is any particular cultural pattern distinctive and unique. At the same time, such a culture can never be regarded as static and fixed. Quite apart from sudden and extensive intrusions and reorganisation in response to new external contracts, or drastic alterations in physical conditions, the pro-

density for innovation will continually produce variations on existing themes, some of which, influenced by subtle internal changes, are likely to find acceptance.

Thus, although the nineteenth century conceptions of a unilineal and progressive development open to all peoples have long been discredited, the explanatory value of the basic concepts of evolution for an understanding of the cultural history of man is confirmed by such ethnographic and archaeological knowledge as we now command. Human cultures and social systems have shown the same general trend towards increasing complexity and differentiation through time as that found in organic evolution and there are many analogies with organic evolution in cultural development. Culture as an emergent manifestation of the most elaborate life form shows the same propensities as are found in organisms for the development of new forms and functions, for the radiation of such forms as are more successfully adjusted to a given range of environment, and for the reduction or extinction of other forms with which these compete successfully.

But the processes involved in socio-cultural evolution differ basically from those in the organic field, for they are psychological and not genetic and the units of modification are societies, not individual organisms. They also include processes of transmission and assimilation which are not matched at organic level. For, whereas organic evolution depends on the transmission, perpetuation and recombination of new biological features or mutations through the processes of reproduction and genetic inheritance, cultural mutations arise from the innovations of socially stimulated individuals, depend for their social acceptance on their functional congruence with an existing socio-cultural pattern and are maintained only by precept and learning.

If a cultural innovation secures acceptance in a population, the new patterns of activity and thought can not only be transmitted to all appropriate members of that and succeeding generations. It can be extended by diffusion to all the other receptive populations in contact with it. Cultural and social evolution can accordingly proceed much more rapidly to produce a wider range of variations, and, at the same time, a successful cultural pattern can radiate much faster than a biological species. The result is, accordingly, not the production of a new species composed of many members closely resembling one another, but a new source of diversity in the many communities that come under the influence of a radiating cultural innovation.

The wide extension of comparatively few standardised tool forms

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among the early human communities of Palaeolithic times shows clearly how widely and firmly particular techniques can be diffused over vast but thinly populated areas and transmitted down many generations. It is likely that this wide acceptability and persistence is a function of the contribution that such devices made in the given conditions to the better maintenance and survival of the multitude of local groups that adopted and retained them. This process of wide diffusion and long persistence of cultural patterns of basic survival value is to be soon repeated with later discoveries and inventions. It can be reliably inferred that the human populations of the Palaeolithic, and in but slightly less degree of the early Neolithic phase, were segregated into a multitude of small and closed groups between which there were only intermittent or indirect contacts through relations of local alliance. But these were sufficient to ensure that new devices and styles in tools and art could become known and accepted over wide areas. The evidence from later archaeological periods and from ethnography shows this to have been equally true of effective concepts, symbols and techniques in the sphere of religion and political organisation.

The cultural record also shows clearly that from their small and highly discrete beginnings, human societies have tended to increase in scale wherever technical advances, whether in the production of resources or the improvement of transport and communications, have taken place. Thus there has been a concomitant process of accumulation of cultural devices which have increased the members and life expectancies of men and of social devices for integrating them into ever larger and internally more differentiated social systems.

This evolution towards an increasingly wide integration of cultural pattern and social life has progressed to the point at which we can already speak in a real sense of a world culture pattern within which particular features, known or significant only for particular peoples or statuses, are nevertheless specialised components or peculiar variants of a wider whole. At the same time, there is to-day hardly a community that is not, again in a very real sense, socially a sub-segment of one or other of the few politico-economic systems into which the two thousand million human beings alive to-day are organised. This is a far cry from the situation that we can reasonably infer existed when *Homo sapiens* first expanded over the Old World to spread the beginnings of the Upper Palaeolithic cultures. Mankind then consisted of a few hundred thousand living beings dispersed into a multitude of virtually closed societies, each a few dozen strong.

From this point of view the cultures and social systems of mankind

have undoubtedly evolved. New and more complex behavioral patterns with capacity for wide radiation have successively emerged as a consequence of the high propensity for innovation and learning of the human species. Finally, it should be said that this propensity must be regarded as innate, and that cultural elaboration and the expansion of social systems are inherent characteristics of man. Particular configurations like Roman engines of war, the ceremonies of the Aztec, or slave plantations, may prove to be cultural mastodons doomed to disappear in competition with more flexible forms. But while any given civilisation—in the sense of a particular socio-cultural configuration—may, indeed will, disintegrate, when it ceases to be adaptive to changed circumstances or powerful competitors, the process of cultural evolution and social elaboration will not cease so long as there are human beings alive.

THE MOVER AND

THE ADJUSTER

The influence of man on man is exercised sometimes to assemble a group of individuals moved toward common action, sometimes to remedy the antagonisms which naturally result from the conflict of human wills. These two situations give rise to two forms of authority¹ which are seldom found in the same person, since one form is essentially exciting and the other essentially calming. The contrast between them can be illustrated by the two images of the bridge of Arcole and the oak of Vincennes.

The Bridge of Arcole and the Oak of Vincennes

The print which shows Bonaparte hurling himself at the enemy and urging his soldiers to follow sums up in a single scene all the influence toward action he had exercised on them since he had taken command. He had found troops low in morale and without any disposition to take the offensive; he breathed his own fire into them; his famous proclamation tended to imbue them with his own ambition, and united them as par-

1. We mean by *authority* any moral influence capable of weighing as a cause on the actions of others. This influence may be inherent in the individual or drawn from the prestige of the institution he represents.

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ticipants in his plan. By a remarkable feat of transference, impatient because he was without glory, he made them realize that they were without shoes, and he materialized for them his own vast dreams in the visible form of "the fertile plains of Lombardy."

Out of a collection of inactive factors, Bonaparte made a moving whole; he himself, the leader, appears to us standing and rushing forward. St. Louis, on the contrary, appears to us seated under an oak. Through accidental circumstances which accentuate the contrast, the scene of the bridge of Arcole was popularized in the form of a violently colored print and that of the oak of Vincennes in a lithograph. Like Bonaparte, St. Louis changes the attitude of the people around him, but in the opposite direction: the parties at odds with each other arrive at a pace hastened by the ardor of the dispute, and return calmed. Like a hot furnace, the prince of action accelerates the movement of the social atoms to give them a power of collective expansion; like a cold spring, the prince of peace slows up this movement to soften the shock of collisions among them.

This furnace, principle of movement, and this cold spring, source of order, constitute the two poles of social existence, the changes wrought by the one being incorporated into the other to establish a new equilibrium.

A Fixed Framework

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Naming is the first social activity that the child is taught. What he learns to name are the phenomena which make up his universe. As this universe broadens, the proper names multiply: the child is already several years old before he learns that his mother has another name than "Mama," and still older when a certain river becomes for him "the Seine."

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A vocabulary above all else is a social thing. Its acquisition gives a common frame of reference to the members of a group. The Avenue Joseph Stalin may awaken different emotional reactions among the inhabitants of St. Denis; but for all of them it is the same fact, which can be referred to for purposes of finding their way around. A man who makes a mistake about a habitual word, who thinks the Piraeus is a man, admits he is a stranger to the group. A man's place in society may be revealed by his vocabulary. A Canadian may have the same stock of common names as a Frenchman, but he will not have the same stock of proper names. The man to whom a learned word is meaningless does not belong to a certain cultural group, and one for whom a certain Christian name does not denote a specific individual does not belong to a certain circle of society.

Thus a small or large social group is characterized by the continual

The Mover and the Adjuster

reference to a number of common landmarks. These are shared securities, guideposts of all relations, of all communication. But these guideposts can play their role only because they are fixed. To that end, an individual judgment of fact must be continually corrected by the judgment of others. This river, which continues the Saône, seems to me to be the Saône, but I must call it the Rhône, or else there will be a misunderstanding. The obstinacy of certain individuals in continuing to call Louis XVIII "Capet" after he came to the throne was at once a sign and a cause of trouble. But this accommodation of factual judgments to the social perspective is only one of the conditions necessary for utilizing the guideposts. It is even more important that the objects which serve as guideposts keep their original essence and do not continually change.

If I have promised a spade to my neighbor, and in his hands it turns into a serpent—whether in his eyes alone or in those of witnesses—social life becomes impossible. In fact, the continual alteration of objects, without any comprehensible law or possibility of prediction, constitutes the typical atmosphere of the nightmare, and man cannot live in the anguish it induces. The solidity of environmental factors is necessary for our existence. It is significant that human thought first took wings through the contemplation of the stars and the discovery of celestial orbits—in other words, through what is most constant, changes most slowly, in the universe perceptible to man. Man probably could not have thought or even lived in a world where all rhythms except his own were greatly accelerated. Suppose that, keeping his own timetable, he had to descend into the kinetic world of gases where configurations are continually altered by unpredictable collisions. No intelligent action would be possible.

Man has always felt the need of fixity in his environment. Indeed, it constitutes the very condition of his efforts to act on this environment; the routine of things permits the innovations of man. Now the human environment is not made up of objects, but of phenomena in which the part of man (the social) and the non-human part (the natural) are not easy to discern. The ego demands that the non-ego be kept in its place so that the ego can act upon it. This inertia is its Archimedes' fulcrum: the revolutionary himself relies on inertia, even in those he excites, for once they have received the movement with which he endows them, they should, in his opinion, continue to move in the direction he has assigned to them. This extreme example points up the role of the inertia of the non-ego in human calculations.

Hence the position held in all human societies by the concept of "main-

tenance." Man today reckons on the maintenance of everything he calls part of the natural order through the operation of what he calls the laws of nature, and he counts on the same degree of regularity in human actions—a regularity induced by custom and upheld by law. The great difference between these two sorts of regularities has often been noted. It is clear that so-called primitive societies distinguished very badly between the natural and the human factor in the surprises administered by their environment, their tendency having been to seek for a single guarantor against all these surprises. The systematic analysis of mythologies, either those which belong to the remote past of civilized peoples or those which belong to the very recent past of peoples who form the subject of ethnological studies, shows almost everywhere the existence of cults devoted to holding in place, and human beings who were held responsible for this maintenance.

The Crown

Everything now known about societies which are backward by our criteria bears witness to the extreme diversity of human groups, which gradually lessened: the idea that all primitive societies were cast in a single mould is today abandoned. It is very possible that traits which seem to us extraordinarily widespread in the societies we have studied may have been entirely absent from those which have disappeared—perhaps for lack of these very traits. Among the societies which have survived, well or badly, up to our time, the government appears in various aspects and sometimes seems entirely absent; but there is one factor which is met almost everywhere, except in people whose fate is particularly miserable, like the Eskimos. This factor is the presence of a stabilizing authority, a gauge of all regularities.

Maintaining what? Often, not only the social order, but also the cosmic order, from which the social order is not distinguished. A favorable world, bringing no disappointments, without drought or disappearance of game, without epidemic or famine is wanted, and disturbances which occur in the social group are often viewed in the same way as troubles of the natural order. The *mana* that makes the rain fall likewise directs the arrow to its target, and a movement against order may unleash either the elements or the anger of a neighbor. Rituals or ceremonies are forms of insurance against risks, whose diversity is not analyzed, in order to bring about a favorable outcome of human operations—*fortuna* in general.

One of the fundamental ideas of humanity is that structures are images of one another, witness the enthusiasm with which late nineteenth cen-

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tury physicists pounced on the concept that the atom repeated the planetary system. These images may be almost unrecognizable, through transformation (in the mathematical sense), but a knowledge of the mysteries reveals their correspondence. Hence all the magic action which is exercised on a representation in order to influence the thing represented—as when a pantomime representing fecundation induces fecundity.

Older than discursive thought, the symbol guided the former before illustrating it. The circumference suggests irresistibly the idea of order, equilibrium, perfect arrangement. It is a figure into which no deformations can be introduced without the eye's attempt to rectify them, as numerous experiments prove.² The crown, in its simplest form of a circular thread, is thus the image of a hoped-for good. In all ages, crowns have been offered to the gods to express gratitude for the order they maintain and to beg them to conserve that order. In the same way, the crowns or funeral wreaths which accompany the dead, or with which images of the dead are decked, symbolize the wish that they may benefit from this cosmic order. Sappho and many others bear witness to the belief that sacrifice to the gods was not efficacious unless the sacrificer was crowned. The same thing is still true of the priest: the tonsure is the definitive incorporation of the crown into his person, without which he could not celebrate the sacrifice of the mass, and which consecrates him to this celebration. In Greece, priests were called "wearers of the crown."³ The reception of the crown, the coronation, is a consecration to the mission of seeking balance—a halter which attaches the crowned person to his destiny, to his aim, and arms him for supplications to the forces of order. All this is very clear. It is perhaps audacious, but tempting, to apply the same concept to the victor's crown, seeing in it an exorcism, a consecration to order of the force which has been evoked, preventing destructive uses of the *potentia irascibilis* employed against the enemy.⁴

2. Our tendency to see perfection in the imperfect figures we are shown is well demonstrated by Koffka. Cf. Kurt Koffka: *Principles of Gestalt Psychology* (New York, Harcourt, Brace & Co., 1935).

3. Cf. R. B. Onians: *The Origins of European Thought about the Body, the Mind, the Soul, the World, Time and Fate* (Cambridge, University Press, 1951), pp. 454-462.

4. Temporal victory demands an excitement on the part of the fighter which must be made to disappear afterward, for fear of the effects it may exercise on domestic order. This idea is admirably developed in *Horace et les Curiaces*, by Georges Dumézil, to whom our debt is immense. See especially how the necessary cooling off is symbolized by the three tubs into which the Irish hero Cuchulainn is plunged after his victory and to the water of which he gives up his excess heat. Furthermore, we know through historic texts how attentive the Romans were to make victorious warriors come back to order: the example of Cincinnatus was emphasized deliberately.

The crown, in a word, denotes essentially consecration to the maintenance of order, and not at all, as has often been believed, power over men. The sign of power is the scepter, which is a stick, an embryonic form of both the weapon and the tool. One has only to note how in our day the crown and the scepter are separated—the crown on the head of the priest, the stick, or baton, in the hand of the marshal, who commands and leads men.⁵ The union of the crown and the scepter, one below the other, is not at all necessary; it belongs to a mode of thought already touched by positivism, in which an executive power is recognized as indispensable for controlling disorders of human origin. In truth, there is another form of the stick which is more fundamentally related to the crown. It is the diviner's rod on which Oedipus leans when he guesses the Sphinx's riddles. It is also the staff of the pilgrim (the traveler in quest of God), and seems to have inspired the idea of the bishop's crozier.

"Rex et Augur"

These considerations lead us to regard as the keystone of a society an authority which guarantees the stability of the environment, and does so principally by interceding with the gods (the *virtus* of the *rex* is therefore essential), and by announcing (thanks to the consultation of omens) what is *fas* or *nefas*, what lines of conduct, what actions will be *fortunate* or *unfortunate*. Thus is justified the association of the *rex et augur*, which is found in Virgil.⁶ It is clear, furthermore, that in announcing the *fas* and the *nefas*, the king exercises a power of opinion over actions, and that, even in a society where the harm done by man to man does not call for public punishment (and many examples of such societies are known), the individual act which is liable to trouble the cosmic order and to call down misfortune on the community must, once it is recognized as such by the *rex*, call the punishment of the people on the impious one.

In this respect, a passage from Aristotle⁷ throws an illuminating light on an essential characteristic of the authority charged with upholding

5. See this note of Paulin Paris: "Bailli (the bailiff) is here the regent, the one who governs in the absence or during the minority of the natural ruler. From *bajulus* (stick), was derived *bailli*, the one who holds the scepter, the stick. The *bail* and the *baillie* are the government, the power." Paulin Paris: *Les Romans de la Table ronde*, T. IV, p. 361 note to p. 135. The note on the celebrated scholar is all the more interesting because here the man with the commander's stick is clearly distinguished from the sovereign.

6. Aeneid IX, 327: cited and commented on by Dumézil in *L'Héritage indoeuropéen à Rome* (Paris, Gallimard, 1949), pp. 205-206.

7. Aristotle: *The Constitution of Athens*, chapter 57.

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order. Speaking of the constitution of Athens in his time, Aristotle notes the role of the king, who continues to exist: "Indictments for impiety come before him, or any disputes between parties concerning sacred rites for the ancient families and the priests. All actions for homicide come before him, and it is he that makes the proclamation requiring polluted persons to keep away from sacred ceremonies. . . . The King and the tribekings also hear the cases in which the guilt rests on inanimate objects and the lower animals."

He appears clearly as intervening when questions arise concerning religious cults or impieties. In this very lay stage of Athenian civilization, these affairs no longer have the importance they had earlier. It is significant that the king is still responsible for them, and one may conclude that in the earliest times they were already his essential concern.

Also instructive in Aristotle's text is the description of the functions of the *archon*, who in very ancient times appeared as the double of the king. "As soon as the Archon enters office, he begins by issuing a proclamation that whatever any one possessed before he entered into office, that he shall possess and hold until the end of his term."⁸ How can one fail to see here the reflection, on the specifically social plane, of the guarantee of solidity, of stability of the universe, given by the *rex*? Whoever analyzes the vows taken in historic times by sovereigns on their coronation will often find some analogous formula of consolidation of acquired rights.

It is true that the mediating and oracular functions of the *rex* put him in a position to present as pleasing to the gods what is simply pleasing to himself, and to metamorphose a stabilizing authority into an arbitrary power: Africa and Asia offer examples of this metamorphosis. The Greeks and Romans, on the contrary, soon limited the *rex* to a very abstract stabilizing function, while the historic peoples of Europe adopted an intermediate solution. Although they recognized in their king the concrete powers necessary for the maintenance of the established social order—the *law* conceived as immutable—the power of innovation in legislative matters did not historically belong to the sovereign: it was a conquest of the 16th and 17th centuries—and, we may note, it prepared the fall of the monarchy.

Since the mission of the *rex* was essentially to conserve, to consolidate the known order, and since he did this in the beginning much more through the mysterious operation of his *virtus* than through concrete processes, the mystery of hereditary transmission of the crown becomes easy to explain. It is in the prime interest of society that every stock of

8. *Constitution of Athens*, chapter 56.

rights or powers which loses its possessor (notably through his death) must immediately receive a new one, designated without any possibility of contestation, rather than being permitted to become a prey for appetites. A positive advantage for France, for instance, was the immediate knowledge of who became king on the death of a monarch. But this advantage is not enjoyed unless uncertainty is entirely excluded, as happens with the system of primogeniture in the male line, which was adopted only slowly and painfully.

Positively disadvantageous, on the contrary, is the system of undefined family inheritance, according to which any member of the family of the deceased may become his successor. For the choice of the successor is limited to the family (a fact which rules out capable candidates who might otherwise be available) and yet the certainty which would obviate quarrels is lacking. This system appears to be the worst of all, yet it seems to have been almost universally practiced and to have been an inexhaustible source of civil war. This quasi-universality is easy to explain on the hypothesis that the benefits spread by the *rex* were essentially the consequence of a *benediction* common to all the *stirps regia*, and that it was impossible to know in advance in which member of the perpetuating family it was the most concentrated.

Among the Franks, all the princes of the blood, distinguished by their long hair entwined with ornaments, had an equal right to the throne and were often collectively called *reges criniti*. The right was not lost unless the hair was shaved—a humiliation to which a Merovingian queen is said to have preferred death for her grandsons. The princes born while their father was on the throne (“born to the purple”) were thought to have a better right than those born before the coronation, but bastards had no less a right than legitimate sons. Perhaps one should not speak of “right” in this connection, but rather of the probability, felt by the subjects, of the presence of the *mana*. One or another seemed to be preferable, as having the best chance to be the bearer of *fortuna*.⁹

There is a striking resemblance here with what Roscoe reports about the Baganda, among whom the princes born of a king during his reign, “princes of the drums,” are preferred to the others, called “peasant princes.” On the death of the king, the mayor of the palace (Katikoro) has the princes called together by their head guardian (Kasuju) and these two dignitaries, before an immense crowd, review the princes and finally,

9. Fritz Kern: *Kingship and Law in the Middle Ages* (Oxford, 1948), pp. 12–27.

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after apparent hesitation, call one of them out of the line. In his name, a challenge is thrown to the others, and if it is not taken up, they are told: "You are all peasants," and are led off to eat a Gargantuan meal while the chosen one is escorted to his father's body, which he piously covers with bark.¹⁰

Despite the various precautions taken by different peoples to disqualify definitively unsuccessful competitors for the throne, the notion that they are bearers of *mana* means that they remain a danger. Thus may be explained the massacres of princes so frequently seen in history.

These examples make it seem that one should not speak of a *right to command*—a very late invention, taken over by democracy from absolute monarchy—but rather of the people's interest in providing themselves with the best lightning rod, with the most "fortunate" among the "fortunate," the most likely, through mysterious faculties, to consolidate the framework of life and to keep up the regular flow of the forces of fecundity.

The Lesson of Bathsheba

There is, however, no occasion to maintain order until order is established. Every people has its legend of foundation, in which a violent hero conquers the forces of chaos. It should be noted that he is rarely free from crime: thus Theseus, founder of Athens, betrays Ariadne and causes the death of his father, Aegaeus. Romulus, founder of Rome, murders his brother. By a brilliant stroke of intuition, Rousseau recognized the intentional and didactic character of the contrast between Romulus and Numa, the feverish creator and the peaceful stabilizer¹¹—a contrast which is powerfully developed in the admirable works of Dumézil.¹²

But the Bible itself presents this diptych: David and Solomon. David the warrior born, who triumphs over Goliath in his first test, and "slays his ten thousands" is the real founder of the kingdom of Israel. He is a leader, as those who come to find him after the death of Saul point out: "And moreover in time past, even when Saul was king, thou was he that leddest out and broughtest in Israel." Already others had come to join him as he fled the wrath of the king; once he has been made king in his turn,

10. John Roscoe: *The Baganda* (London, 1911).

11. *Du Contrat Social*, Bk IV, ch. 4.

12. Notably in *Mitra-Varuna, Essai sur Deux Représentations de la Souveraineté* (Paris, Gallimard, 1940), a work of capital importance for political science, which has not yet incorporated or even measured the immense and valuable contribution of this master.

he assembles, he takes a census—this, by the way, is charged to him as a sin—and he rounds up strangers and a host of materials to build the house of God.¹³

However, even though he has prepared everything for the construction of the Temple, David does not undertake it. He calls his son Solomon, and speaks to him thus:

"My son, as for me, it was in my mind to build a house unto the name of the Lord my God.

"But the word of the Lord came to me, saying, thou hast shed blood abundantly, and hast made great wars: thou shalt not build a house unto my name, because thou hast shed much blood upon the earth in my sight.

"Behold, a son shall be born to thee, who shall be a man of rest; and I will give him rest from his enemies round about; for his name shall be Solomon, and I shall give peace and quietness unto Israel in his days.

"He shall build a house for my name; and he shall be my son, and I will be his father; and I will establish the throne of his kingdom over Israel for ever.

"Now, my son, the Lord be with thee; and prosper thou, and build the house of the Lord thy God, as he hath said of thee.

"Then shalt thou prosper, if thou takest heed to fulfil the statutes and judgments which the Lord charged Moses with concerning Israel."¹⁴

All the words are revealing: Solomon, a man of peace, will give rest to Israel. He will be wise, and will keep the Law; his throne will be strengthened; he is really the stabilizer. He will not have to improvise or to fight. One thing should be noticed: when Solomon takes a census, there is no question of his action being considered as a sin.

The distribution of roles between David and Solomon is as clear as can be. The choice of Solomon, among all the sons of David, to give peaceful happiness to the people of Israel will appear remarkable if one stops to think that Solomon is the son of Bathsheba. David sinned in possessing Bathsheba, wife of Uriah the Hittite, and he sinned even more violently by sending this particularly devoted follower¹⁵ to a dangerous post, where his companions, by order of the king, were to abandon him "that he may be smitten, and die." Though the first-born of the union thus

13. I Chronicles, XXII: "And David prepared iron in abundance. . . . Also cedar trees in abundance. . . ."

14. I Chronicles, XXII.

15. Cf. II Samuel, XI: Uriah, recalled from the army, does not go to his own house but sleeps at the door of the king's house.

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assured dies at an early age, Solomon is its next fruit. It is not irrelevant that the same Nathan the prophet, who reproached David with his crime and predicted to him the death of Bathsheba's first-born, is the one who, in the face of the presumption of Adonijah, comes to ask David to name "the one who must be seated on the throne of the King my Lord after him"; and that Nathan does not protest when David names Solomon, the son of Bathsheba, but on the contrary is among those who cause Solomon to ride upon the king's mule to go to Gihon, where they anoint him king of Israel.¹⁶

In thinking over the episodes centered around Bathsheba, one wonders if their lesson is not that violence and stain are inherent to the foundation of temporal power. There is nothing uglier in David's life than the ambush into which he makes Uriah fall; and without it, Solomon would not have existed. Solomon crowns the work, but David was its promoter. Here we touch on the dangerous secret of natural rhythms.

The Stabilizer

Let us look now at the function of the stabilizer, the pacifier. We have advanced the opinion that the crown symbolized the vocation and the end of the upholding authority, the stable equilibrium of cosmic and social arrangements, considered as a whole. One may find a symbol of the way in which this equilibrium is maintained in the shield which, according to Roman tradition, fell from the sky under the reign of Numa, the *flamen* and consolidating *rex*. The shield protects: it is by means of the protection fallen from the sky that the *rex* interceptor shelters his people from unhappy events. It will be noted also that the shields given by the gods often have the form of the world, like the shield given by Zeus to Achilles. The order of the world is guaranteed to the one who is loved by the gods and he, in turn, guarantees it.

According to peoples and their disposition, and according to the period, the vagaries of Fortune will appear to be due more or less exclusively to the actions of the gods, or, in a growing proportion, to the actions of men. If everything happens through the action of the gods, there is no recourse except through changing the *rex*, who was not able to win their favor. But as soon as it is admitted that misfortune may be caused by the impiety of one member of the people, or of the people as a whole, then a certain causality is attributed to human action. The logical deduction from this is,

16. I Kings, I.

if not a repressive power of the *rex* directed at impious acts (for it seems that the existence of specialized repressive agents came about extremely late), at least a function of the *rex* as denouncer of the one who is guilty of impiety, leads the people to punish him as the cause of the collective misfortune.

In any case, it was impossible for men not to perceive that their misfortunes were often immediately caused by human agents. Without pretending to state a general rule, it appears that these injuries were first avenged by the injured person or his relatives, and not, as we say, by society or its representative. Nevertheless, as these vendettas were a source of trouble, it seemed necessary to suppress them. The maintenance of equilibrium thus demanded the intervention of authority, not as judge, but as mediator.

A society can subsist only so long as its members refrain from infringing on one another's domain (*Dius Terminus*), respect their given word (*Dius Fidius*), act with reciprocity (*Do ut des*, commutative justice) and as a general rule do what the others expect of them. The failure to do as expected destroys the social bond. Consequently, the authority, as such (that which increases confidence) must necessarily watch out for aberrant conduct and bring things back into their proper channel. This temporal role may be exercised by the *rex* himself or by his double. One gets the impression, in studying the development of power, that it develops by a sort of parthenogenesis: often the man who acts as guarantor where the gods are concerned has his double, i.e., the one who reestablishes order insofar as it is disturbed by men. Elsewhere, action on the gods becomes the affair of a *sacerdos* and the *rex* applies himself exclusively to human affairs.

Through whatever person this role may be exercised, there is, in any case, a guarantee of respect for usages, since a disordered usage propagates waves of trouble. For example: in a people where inheritance is from the maternal uncle to the nephew, as frequently happens, a father wishes to transmit his heritage to his son. But if he does this, the dispossessed nephew has cause for complaint. He may react violently against the son or he may in turn demand the heritage of his own father, which dispossesses the latter's nephew. The disorder spreads. Let us take another example: in a people divided into two exogamous classes, which may also be found, women are purchased, for example, with cows. But a Romeo elopes with his Juliet. Because of this, the family of Juliet is deprived of some extra cows which were necessary so that the men of Juliet's group might in their turn acquire girls from Romeo's family. Juliet's group may react by

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punishing Romeo's act or imitating it. If they imitate it, a different practice becomes general; the story of the rape of the Sabines might perhaps be based on the memory of such a change of practice.

The two possible reactions to a change show that the stabilizing authority may act in two ways. It may repress all changes by incessant vigilance, or it may also consecrate a change which happened once and tends to become generalized—make of it a new usage. But whether it does the one or the other, its role is always to ensure repetition. For the stabilizing power ensures certainties which can come only as a result of regularities.

One sees immediately that in a very complex, evolved society like ours, the role of the upholding authority is both essential and very delicate. It is essential because, the more men depend on one another, the more regularity on the part of their fellows is indispensable to them. A civilized man's whole day depends entirely on the presence of others at their social posts. Though our society appears to us very mobile, in truth it is far more completely modeled on routines than are societies which we call inferior. The upholding of the innumerable pillars on which our existence is founded is not, of course, caused by authority: authority is only the guarantor, and, as such, it must intervene to bolster up the pillars that totter. But at the same time, the progress of a civilized society depends on the action of leaders (or movers) who, in different parts of the social body, are a principle of innovation. To let these innovations, or some of them, pass, while continually adjusting the general equilibrium, or at least watching over its adjustment is what makes the task delicate. Authority is no longer simply maintaining, it is adjusting.

While putting this aspect of the problem in its proper light, one must not forget that the essence of the task is to conserve. In a society the portion of change must be small and the portion of regularity very large. The individual can digest change only in small doses. It does not matter that the Avenue Henri Martin is now called the Avenue Georges Mandel. But if all the streets of Paris changed their names every week there would be general confusion. That which does not change conditions that which does change: if the Avenue Georges Mandel is the one which begins at the Trocadero and ends at La Muette, all is well—but not if Trocadero and Muette receive other names too. What is true of names is far more true of modes of behavior.

The upholding authority appears, then, to us as the essential social authority. Without it everything falls to pieces. But clearly, too, it can immobilize a society. And this is not difficult, for initiative is not born every-

where and leaders are not numerous. Consequently, all that is necessary is a certain vigilance toward the change-mongers, whether this vigilance is enforced by deep beliefs or by repressive means, to stamp out every principle of change. And even as initiative is contagious, so is inertia; it can happen that the surge of initiative and movement can become extinguished in a people. Different causes can lead to the same effect: either the absence of initiative, or the disorder of peripheral initiative which the central power can neither destroy nor adjust, can equally call to the central post of authority a leader who will awaken initiative (in this case he will often come from outside) or coordinate it. Thus the leader, the *dux*, has his hour. Nevertheless, it seems that human societies cannot tolerate for long a situation in which the central power is continually a *dux*. The upholding authority presides over society, the movers deploy themselves in society, and the mover is only intermittently at the head of society.

A Principle of Classification

The principles stated above may perhaps facilitate a classification of the attitudes of the public power—that is to say, of those who exercise it. If the public power is obsessed by its function as the guarantor of regularities, of responsibility for the behavior of all others, of upholder of an order known with certainty, it will be worried over everything which introduces a disturbance; it will want to hamper not only every deviation of individual behavior, but especially any call to unaccustomed acts, and therefore it will try to silence all leaders who show themselves within the social body. It will then be a protector of routines, an enemy of initiative, conservative to the point of social immobilization.

The central authority will be called liberal, on the contrary, if it looks with a favorable eye on leaders arising here and there in the universe over which it presides. But it should not be forgotten that each birth of a new form of behavior permitted by the authority disturbs the certainty of the people; and to fulfill its task as a social guarantor the public power must continually remedy the uncertainty which results for some from the innovations brought about by others. If the authority fails in this adjusting function, the innovations will cause increasing trouble, and without being exactly conscious of it, the members of the society will call upon a public power capable of restoring certainty, no matter of what kind.

Still a third attitude is possible on the part of the public power. Instead of authorizing broadly the innovations born outside itself in the social body, it may reserve to itself the monopoly of movement. Instead of con-

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serving the society in its existing state, as in the first case, instead of letting it evolve as in the second, it can attempt to cause and determine its evolution. Those who exercise the public power may reason in the following fashion: change is good, but the adjustment of a number of autonomous changes is very difficult; it is much easier for these changes to achieve harmony among themselves if they are all decided by the same mind.

Whether or not experience justifies this reasoning, it appears to be founded on logic. It will be noted that the public power which thus decides to assume the function of moving will necessarily take toward private movers arising here and there in society an attitude just as negative, just as repressive, as the most narrowly conservative power. Indeed, if the conservative authority cannot tolerate what disturbs the existing order, the moving authority cannot tolerate what disturbs the dynamic order whose progress it directs. Both are opposed to the authority which permits changes.

The moving authority poses the really interesting problems. It must of necessity sift more or less finely the innovations in modes of behavior, the novelties; it must also, of necessity, take care to compensate for the uncertainty which has been introduced. It is in this sifting, this compensation, and the unceasing correction of balance, that the question of the Political Good is most frequently posed.

THE REVOLUTION IN THE WORLD-VIEW OF HISTORY

About twenty years ago a book entitled *Umsturz im Weltbild der Physik* ("The Revolution in the World-View of Physics")¹ appeared and was eventually widely read. It described the basic change which our views in the natural sciences had undergone during the first three decades of this century.

A similar book could be written today concerning the other, humanistic side of our conception of the world, for so radical a change has taken place since then in humanistic ideas as well, that it approaches complete revolution. This change can be briefly described as a transition from the part-whole synthetic point of view to whole-part, analytic thinking; from a Ptolemaic, egocentric standpoint to a Copernican, relativistic one; and from "thinking in terms of nations" to "thinking in cultures."

Let us examine the last point first. A transition has taken place, it has been said, from thinking in national terms to thinking in terms of cultures or civilizations. What does this mean? One need not be a hardboiled skeptic to recognize with Goethe that what historiographers call "the Spirit of the Ages" is often merely their "own spirit, in which the Ages

1. By H. Zimmern.

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are reflected." We can no longer consider this to be an unconditional reproach, for we have also realized meanwhile that "every people has the right to choose its traditions," as a brilliant contemporary cultural philosopher, Baron J. de Evola, has formulated it. That is to say, the interpretation of the past in any given way is ultimately a matter of subjective discretion. However, "discretion" implies more arbitrariness than is actually involved, for, in fact, we are here confronted with a compulsion, a subjective constraint. All peoples see their past as they must see it, on the basis of its nature, its anxieties and longings, and its innermost impulses. History is the very way in which a person, a people, an epoch understands itself, interprets its own destiny.

It is not only men and nations that have their own historical forms of perception, but whole epochs as well. The Middle Ages of the West thought in terms of *imperia*, the Baroque period in dynasties, the nineteenth century in peoples and nations. Our own century is in a state of transition from "thinking in nations" to "thinking in cultures." The nineteenth century experienced its destiny in the form of destinies of peoples. Peoples and nations, that is, conscious human communities with the same language, culture, and history, were the decisive vehicles of political, economic, and cultural forces. Everything of significance that happened in our cultural sphere ran its course through the interplay of these units. Their survival, their growth, and their future appeared to constitute the meaning of history. Consequently, that century also saw peoples everywhere, and, indeed, peoples of the modern, liberal-democratic occidental cut. The ancient Egyptians were such a people, the Sumerians, the Indians, the Chinese; the Greeks, the Romans, the Carthaginians, the Gauls, the Germans, the Ottoman Turks, the Mongols; and again the present-day Egyptians, the Greeks, the Armenians, the Jews, the Syrians, the Indonesians, the Russians. Whenever these groups would not fit the scheme, they were simply considered "unredeemed" peoples, "not yet aware of themselves," "enslaved," not yet participating in the blessings of democracy. In all cases, however, they were possible subjects (and objects!) of "national" politics, which was forced upon certain groups among them with greater or less pressure, whether or not they themselves, as a majority, desired it and considered it necessary. They simply had to think in nationalistic categories, even if it called for the sacrifice of their essential nature to do so and even if the West itself incurred nothing but damage from it. For nationalism was not only the grand slogan of the century, it was at the same time its political and historical "a priori form of intuition."

In the meantime the wheel of history has rolled on a good way. Nationalism, which is now going through its greatest excesses in the Orient, is already beginning to collapse in the Occident. The politics of the Third Reich, that unique hybrid form of outmoded racial nationalism and potential Caesarian imperialism, represents, probably, the last orgy in which nationalism has indulged on its home grounds. What the West—more precisely, old Europe, for the New World has long since passed beyond that stage, and, indeed, in those countries which play a decisive part, has never thought nationalistically—is still going through at the moment in the way of nationalistic moods, resentments, oppositions, and jealousies, is only the backwash of a manner of thinking and perceiving which is rapidly fading away and which will scarcely outlive our century. Its place is obviously being taken by a mode of thinking of a completely different style and scope, in which the western nations are not stepping forward as the decisive units of history, but rather the West as a whole is coming onto the stage as the critical subject and object of history. Whenever and wherever “ultimate” questions of politics, economics, or culture are being argued today, they are automatically treated in terms transcendent of nations, that is, not in relation to this or that nation but to the occidental world. It is this Western World of Toynbee which holds sway over our consciousness as a true totality. In comparison to it the old nations are felt to be only dependent parts with neither sense nor destiny per se, autonomous neither in significance nor fate.

This totality of the western or occidental world, which is felt to be clearly demarcated as a whole from the rest of the world, even though a rationally drawn linear boundary is in many areas impossible, is conceived as a “cultural unity” or more precisely as a “civilization” (*eine Hochkultur*). In the meaning used here of a community of people related in their historic destiny, people of autonomous thought, sharing the highest culture or civilization, this concept is still relatively new, at least as far as ordinary usage is concerned. It is, after all, only since Oswald Spengler's *Decline of the West* (1918 ff.) that it has been generally adopted. Once formulated, however, it was taken up eagerly in current thought and common language. It seemed as if everything had been waiting for this one word of redemption.² In it the western peoples found an expression for a feeling of community which was suddenly bursting through the old national encrustations, an expression for the sense of belonging to a great

2. People had, of course, talked of “cultures” in the sense of “civilizations” long before Spengler, but only with reference to non-western cultural communities and without the precise definition that Spengler gave the concept.

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community over and above, and in spite of, all linguistic, cultural, and traditional differences. With the weal or woe of this community every individual was felt to be inextricably bound. The awakening of this occidental community spirit can be observed especially well since World War I; and, above all, after World War II. Strictly speaking, one should of course call it a re-awakening, for a community feeling of this type did dominate the public mind once before—in the medieval period. In recent times, in the age of nationalism, it withdrew to the sublimer spheres of science and art but came clearly to the fore again toward the end of the nineteenth century, first in certain areas, such as economics and social movements. The spiritual, economic, and political shocks of World War I continued to break a trail for it. The idea of a League of Nations and the Pan-European plan of Count Coudenhove-Calergi bear eloquent witness to this fact in spite of their subsequent failure. Since World War II, which was certainly fought in part in the name of a Pan-European policy, a "New Order in Europe," and above all, because of the war's fateful results—the sudden appearance of Russia in the center of Europe and the shaking of the western position in the Near and Far East—the situation has been reversed. Nationalism has been put on the defensive everywhere, with no prospect of relief. On the other hand, the western sense of community has made everywhere a victorious advance. Science has here, as so often, served the function of a seismograph. By introducing "thinking in cultures" it has announced the distant tremors and, besides, furnished the concepts and slogans for the new way of thinking and feeling. For the form in which the West now conceives of its unity is that of a "civilization," as a group of related nations with a uniform style and common fate, which makes and undergoes history as a totality.

Occidental man of the nineteenth century felt himself to be primarily a German, an Englishman, a Frenchman, and experienced his world as a world of peoples and nations. In the second half of the twentieth century he is a "Westerner" living world history as the history of civilizations. The West's conception of itself as a civilization has a bearing not only on the present and the occidental cultural sphere; the whole past of the western world is seen at once in the light of this cultural concept, and western humanity suddenly sees everywhere in its surrounding world, too, growing, maturing, declining, disintegrating, decayed civilizations, where before were seen only peoples and nations—real or possible, liberated or oppressed, rising or falling. Its own past is experienced as the history—that is,

the life and development—of a massive organism reaching out over individuals, families, races, peoples, and nations, and having, as a whole, an individuality, a private life and a destiny. The West now relates every particular of its past to this totality, in order to interpret it in that light and, by interpreting, to understand. The same thing occurs with its environment, whether conceived in its present or historical aspect. We no longer ask primarily about peoples and nations, but rather about civilizations. Their history alone seems to us to be "world history" and worthy of special attention. What is enacted in intervals between them, and outside of them, carries a markedly lower value as "primitive history." In a word then, we have passed from thinking in terms of the national state to thinking in "civilizations" and have thereby carried out a revolution in our conception of the world, by bringing to expression the West's idea of itself as a civilization, an act which may well be necessary and conditioned by our fate.

This is, nevertheless, only one side, although the most striking one, of the "revolution in the world-view of history"; its foreground, so to speak. For the intellectual revolution which came inevitably with the transition from nationalistic to cultural thinking has brought in its wake a very serious extension of far-reaching consequence, above all for our historical world-view: the relativization of historical values.

For medieval man there were only "Christians" and "heathens," "believers" and "infidels." The first, who coincided with those belonging to his own cultural sphere, were full human beings, the latter, second-class humans, at best capable of conversion. Modern thinking about the world secularized this classification. Out of the Christians were made the "civilized," out of the heathens the "barbarian," the "savage," "primitive," or, at best, "exotic" peoples. The difference of rank remained: the "savage" or "native," even if he belonged as an "exotic" to a people with a high degree of civilization, was haughtily tolerated as a "colored" man, a human of a lower order, an object of cynical exploitation and hypocritical attempts at "civilization," wherever the Westerner could not or would not extirpate him. He was a pariah or outcast when fate forced him to live in the midst of a "white," that is, an occidental environment. In brief, there was for the Westerner an objective scale of values in which he stood at the summit, with a wide gap separating him from all other peoples and races.

Western man conceived of world history in a corresponding fashion. Of all that had gone on in the past dating from the creation of Adam or the

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invention of the hand axe, that only was important enough for consideration which was or could be related to western man and his development. The world seemed to have been created merely in order to bring the Westerner into being. World history was seen as a linear evolutionary process (sometimes, it is true, with curves, entanglements, detours, and side branches leading nowhere), in which the present moment in the West represented the last phase and highest step of "progress."

The painful and tragic experiences of the twentieth century, both internal and external, have been accompanied as well by a revolution closely connected with the transition to thinking in cultural terms.

The discovery of the higher civilizations as "cultural continents," as units of history autonomous in fate and significance, has at the same time opened our eyes to their own proper values. It was recognised that not only the epochs of history stand "in an immediate relationship to God" as Ranke had shown in European history, but also, and even more so, the civilizations. We became modest. At the moment when a whole series of analogous structures were identified and compared to western civilization, it was no longer possible to avoid the insight that there could be no question of difference in rank or value, that there existed not merely one way of being cultured or civilized, but rather just as many ways as there were civilizations. The spiritual shocks of the age, which caused even those Westerners most optimistic about progress to grow doubtful of their divine semblance, as well as closer acquaintance with alien civilizations, also contributed to the discarding one by one of the old, arrogant prejudices and to their replacement by a new, judicious, objective verdict. Today the notion of any western superiority in rank or value is adhered to, if at all, only in the form of a cautious hypothesis with all sorts of reservations and qualifications.³ Even the technical preeminence of western civilization is no longer held in nearly the high esteem which it enjoyed at the beginning of the century. There is instead a tendency today to assume a certain constancy of the human substratum and to acknowledge the greatest achievements of the various civilizations as, in principle, equivalent in value. People no longer shut their eyes to the fact that there is a way to be civilized just as well "in Chinese" as "in Aztec" or "occidentally" and that there are no characteristics or criteria by means of which a class difference among civilizations could be objectively determined.

This has, in turn, had the consequence that the linear conception of

3. Cf., for example, the exceptionally cautious treatment of the question by A. J. Toynbee, *A Study of History* (London, Oxford University Press, 1933).

world history has fallen into disuse. The course of world history is no longer seen in the image "of a tapeworm that inexhaustibly adds on new epochs," as Spengler ironically stated it, but in the image of a plurality of civilizations, in principle similar and equivalent in value, but variously placed in time and space and hence unequal in age. There exists no basis for raising one of them especially into prominence or devoting special attention to one. Actually, these complexes of history are all of equal importance for our new historical picture of the world. They resemble in this new conception a system of planets of approximately the same size and shape. One of them is western civilization. The only thing lacking is a sun in the center and a corresponding movement. It is not without justice that the intellectual reversal which has led from the egocentric, linear conception of history to the relativistic, rhythmic-periodic conception has been compared to the Copernican revolution in astronomy.⁴ The comparison is pertinent, but in many ways it expresses too little, for the revolution which underlies the transition from "Ptolemaic" to "Copernican" historical thought is probably even greater and of more consequence than the turn from the geocentric to the heliocentric view of the world as such.

What kind of movement in thought has led to this "revolution in the world-view of history"? It is worth while to subject this change to a closer scrutiny, since in it an illuminating piece of the history of western thought is revealed.

It is well known that academic thinking of the nineteenth and beginning twentieth centuries was dominated to a great extent by the natural sciences. The classical method of natural science is the inductive and synthetic method. The natural scientist gets his results by gathering empirically—by the method of experimental observation—the greatest possible number of particular bits of knowledge, which he then puts together into larger complexes, or from which he derives by analogical reasoning or inductions laws of apparently universal validity. Thus he constructs his picture of the world in the fashion of a mosaic, by advancing from part to part and from the parts to their connections, gaining in this way ever higher points of view, more comprehensive insights, and more general laws. In the realm of physical science, the study of so-called lifeless or inorganic nature, this approach was able to produce exceptionally successful results, because the phenomena in this area, at least within the order

4. Oswald Spengler, *The Decline of the West* (New York, Knopf, 1932, p. 25). Pitirim A. Sorokin, *Social Philosophies of an Age of Crisis* (Boston, Beacon Press, 1951), p. 265, and cf. pp. 279 ff., 287 f.; a similar statement appears in A. J. Toynbee, *op. cit.*, Vol. I.

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of magnitude generally accessible to man (the macroscopic realm), are of great uniformity, in a rather loose state of interdependence, and ruled by relatively few and simple laws (e.g., causality) or can, at least, be operated with on this assumption. The situation became questionable, on the other hand, when the same approach was tried out in the realm of organic nature, where, even in the macroscopic sphere, essentially more complicated phenomena and more intricate regularities enter the picture. Nevertheless, the attempt was begun on a wide front and with the greatest optimism. The methodological doubts that should have blocked such a transfer of technique were studiously avoided, and the task was started of pursuing not only the biological disciplines in the narrower sense, but also the sciences of man up into psychology and sociology in a "scientific," that is, inductive, synthetic manner.

Confidence was boundless, for it was supported by the triumphant successes of the exact sciences and technology in the nineteenth and early twentieth centuries. In spite of this, one thing should even then have had a cautioning, sobering effect: the theoretical inexhaustibility of the universe. Reality cannot, in principle, be conquered by an atomistic and synthetic method, for no parts are imaginable which could not be further divided. Atomism is of necessity doomed to founder on this infinite regression. In the realm of inorganic nature this theoretical difficulty is not too tragic because of the above-mentioned uniformity of natural phenomena and the simplicity of the laws regulating them. A validated law of, say, the causal type "whenever A appears, B follows," retains its practical value even if it is recognized to be a merely statistical law of averages at the microscopic level. But in organic nature, where even the phenomena in the macroscopic sphere are much more strongly individuated and at the same time interdependent, such statistical approximations are of little use. From this fact follows here—within the framework of the atomistic synthetic approach—the necessity of limiting one's self to individual instances and foregoing the establishment of "exact" laws altogether. That was, in fact, the conclusion which the so-called humanistic sciences (*Geisteswissenschaften*) reached, placing history at the top.⁵ However, having accepted this limitation, the humanistic sciences did not relinquish the methods of the natural sciences; still less did they set up their own method, as has often been maintained. Indeed, the characteristic method of the natural sciences, the atomistic-synthetic principle described

5. The separation of the "nomothetic" and the "idiographic" sciences made by Windelband and Rickert is based on this limitation.

above, was retained and even constituted the essential part of humanistic methodology, above all, of "classical" historiography. That this method was, of necessity, blind to the profounder insights into its subject matter is only too understandable in the light of its theoretical inadequacy, with which we shall deal in a moment. Worse yet, it led to that fatal overspecialization which has long since been recognized as the canker of our scientific life. A methodological disposition that was on principle out to get at the ultimate elements as constituents of reality, in order to allow an image of this reality to rise out of them, was bound to lead deeper and deeper into the infinity of the inexhaustible world. However, the deeper it led, the farther the shores withdrew and the deeper sank the plummet. The various "daring seafarers" of science drew farther and farther apart; specialization and its consequent fragmentation into a thousand fields of study developed more and more. In the face of a swelling flood of scientifically disclosed and elaborated particulars, the individual scholar was soon, for practical reasons alone⁶ no longer in a position to see past his own most narrowly defined special field. The baroque ideal of the *uomo universale*, which Goethe was one of the last to fulfil, became in these circumstances just as much of a chimera as the *universitas litterarum*, which no mind, however comprehensive, can realize today. However, theory itself naturally became specialized along with practical research—if no one possessed a comprehensive image of the world, none could be furnished for others—and together with theory, general intellectuality. It disintegrated, dissolved, curdled like stale milk that is put on a stove. It lost its inner coherence, its organic unity, and was transformed into an agglomerated complexity of particular data, not unlike the star-filled sky as it appears to the naked eye. By its atomization in this fashion, the occidental picture of the world resembled more and more its methodological ideal. And like this ideal it turned out to be extremely efficient and productive in the realm of physical scientific specialization and the sphere of inorganic nature; on the other hand, it failed wherever it was called upon to grasp totalities and to do justice to the peculiarities of organic nature.

Psychology was the first science to gain an insight into this failure and, indeed, precisely in connection with the problem of wholes. It was

6. The biologist J. von Uexküll has calculated that he would have to live three average life-spans in order to master the special literature of the last sixty years in his field. The literature of such a narrowly limited field as psychological Gestalt theory, of which we shall speak below, comprehended, according to the statement of R. Mattheis in *Das Gestaltproblem* (Munich, 1929), even a quarter-century ago over six hundred items, and this is a case of a special discipline, with only a few works reaching back past 1900, that is, at the time the book was published.

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recognized that the psyche was something greater than and different from the sum of those things which the nineteenth century took to be its contents, i.e., the atomistically conceived perceptual, emotional, and volitional elements. It was realized that the individual psychical event was interwoven in a much more intimate way with the whole condition of the psyche at any given moment than was represented by a merely spatio-temporal proximity, and that this totality, for its part, at least determined the resonance of the parts, and that, therefore, the grasping of the whole had to precede the grasping of the parts, and not vice versa. Social and cultural psychology seemed to urge the same conclusion. Here it was the problem of meaning that gave the impetus to a revision of methods. Significance, it was realized, is dependent on structure, is given together with structuralization. To understand significance is to grasp a structure. But a structure is also grasped only "from above," from a structural unity, not primarily from its parts, that is to say, analytically and not synthetically. How the basically analytically oriented, so-called "humanistic psychology of understanding," which was most concerned with totalities and structures, emerged as victor from this "crisis of psychology,"⁷ is well known. In this clash it was furnished most valuable assistance by a branch of psychology little known and little noticed by the public, Gestalt psychology, especially in the explicit form of Gestalt theory. Here it was proved conclusively by experiment: first, that there are at a phenomenological level totalities (*Gestalten*), that is, forms of a complex nature with definite and specific properties such as nonadditiveness, structuralization, nonpermutability of parts, transposability; second, that these totalities or *Gestalten*, just because of their special properties, can in principle be grasped only by an analytic, not a synthetic, process; third, that it was not only desirable but also possible to grasp them directly and immediately as total structures; finally, that these forms are of decisive importance not only in the field of sense-perception but also in the whole psychic life.⁸

It was natural that these insights had an effect on the other "biological" sciences too; for wholeness in the definition of psychological Gestalt theory is a phenomenon that is met with throughout the organic realm and is, in fact, constitutive for all living phenomena. Wherever a living being ap-

7. S. Karl Bühler, *Die Krise der Psychologie* (Jena, 1927).

8. The chief representatives of psychological Gestalt theory are Christian von Ehrenfels (1859-1932), Alexius Meinong (1853-1920), Max Wertheimer, Wolfgang Köhler, Georg Elias Müller, Kurt Koffka, Bruno Petermann, Felix Krueger, and Ferdinand Weinhandl. The latest survey of the field can be found in David Katz, *Gestaltpsychologie* (Basel, 1944); see also Matthaei, *op. cit.*

pears and life-processes take place, one comes up against total forms and structures, non-additive organizations and dynamic self-articulating processes, where it is always a question of first grasping the given whole in its specific quality as a whole before advancing, by means of structural analysis, to the parts or, ultimately, to the elements out of which it is built. This involves always the "understanding" of significant forms, which, again, can be done only in the light of the totality that produces significance. This is true for biology in the narrower sense, for botany, zoölogy, and anatomy, for physiology, morphology, psychology, for anthropology, sociology, ethnology, historiography, the science of culture, and, in general, all sciences concerned with any form or expression of life. In all these disciplines the new "holistic" approach has been accepted more or less completely. One can say that today the younger, more progressive and modern members of the academic and scientific world, those who possess an organ of perception for the peculiar character of "living" as against "dead" nature and who, besides, sense the need to overcome the tragic isolation of overspecialization, already have the upper hand. The older statistical-synthetic approach in the disciplines enumerated above is everywhere fighting a delaying action. This is true, of course, also of historical science, to which this article is chiefly devoted. Here the methodological revolution, the *renversement des méthodes*—the awakening of the holistic approach—is closely connected above all with the concept of cultural morphology and thereby with the names of Nikolai Jakovlevich Danilevskii (1822-85), Leo Frobenius (1873-1937), Oswald Spengler (1880-1936), Felix Koneczny (1862-1949), Arnold Joseph Toynbee (b. 1889), Pitirim Alexandrovich Sorokin (b. 1891) and others. In cultural morphology and the related currents of modern historiography and sociology that revolution in the world-view of history from which we began has first of all taken place. It has in this respect played a leading role and will probably continue to head the development for some time. The new holistic, analytical mode of thinking has spread from cultural morphology to the other humanistic sciences. It has given the theoretical expression to that "thinking in cultures" which was already in a position of practical dominance over the thought and feeling of modern man. It has furnished precise concepts for this way of thought and thereby brought it our awareness. It has for the first time replaced the Ptolemaic, egocentric point of view by the Copernican, relativistic approach, and in doing all this it has, finally, pointed the way to a possible victory over the fatal fragmentation of the occidental intellect, its disintegration and atomization. This way is—let

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this be our final remark—not as new as it appears. It involves actually a turning back from a cul-de-sac and the recollection of a mode of thought which experienced the world as a sound and whole entity—the approach of a Leibniz, a Vico, a Goethe. Inasmuch, however, as this act of recollection is expressed by a transition from thinking in terms of national states or “parochial units” (Toynbee) to “thinking in cultures,” it is revealed as a measure born of crisis in our civilization’s fight for survival. Forced to gather all its strength in a time of extreme internal and external affliction, to overcome the carefree *laissez faire, laissez aller* of earlier times and to win back its striking power as a world-historical force, this civilization realizes in its new “panoramic” view, above all, its own unity. That it is at the same time returning to an organic view of the world and universe allows us to hope that this change will prove to be in other respects, as well, a fortunate one.

BASES AND LINES OF FORCE IN CYBERNETICS

Cybernetics¹ has fallen prey to snobs and journalists, who, in dealing with it, tend to mix myth with science. In this study we shall try to sift out the chaff, which a regrettable sensationalism has needlessly mixed with the good grain. Concentrating our attention on the rational bases and some of the lines of force of this new field of study, we shall try to eliminate the element of fable, but we shall not prohibit ourselves from opening windows on any perspectives that seem reasonable.

I. Information

The notion of "information," cornerstone of cybernetics, sheds light on the theory of knowledge. What is science, indeed, but an interpretation, which tries to be objective, of the flood of signals with which the universe submerges us? A Protean notion, it permits us to discover a certain unity among the most disparate phenomena. But it is a dangerous notion, too, because of the multiplicity of senses one may give to it.

1. This term was invented—or rather, reinvented, for Plato and Ampere had already used it—by Norbert Wiener in 1947, as a tribute to Clerk Maxwell.

We shall not here stop to consider the various senses which this notion has in current language—every day the newspapers bring us “information” true or false, “information” against x or y is uncovered by the public prosecutor—nor its various literary nuances. But perhaps it is pertinent to recall that, taken in these familiar senses, the idea of information must have made its appearance in prehistoric times, with—and perhaps before—language; and also that, on the whole, the information of the cyberneticists represents that of the man in the street, after it has been decanted, given form and rationalized. In either case a piece of information is a signal, or a collection of signals or signs, to which a significant content is attached. The information should not be confused with the knowledge which it brings nor with the signals or signs which carry it. When I say, in French, “*Il joue aux échecs*,” in English, “He is playing chess,” in German, “*Er spielt Schach*,” or when I write an equivalent sentence in Russian or in one of the languages of India, the signals or signs change every time but the information remains the same.

But in cybernetics proper, the word “information” may be taken in several senses. To enumerate, define and compare them would easily take a volume. Without going thoroughly into this very complex problem, it is well to warn against inconsiderate use of the term and at the same time to draw attention to its interest.

Nyquist, in 1924, made the first attempt to establish the notion of selective information on a scientific basis. At the international telephony and telegraphy congress of 1927, another telephone engineer, Hartley, opened the door to further progress when he showed how to measure its quantity. Reviving an idea launched in 1871 by Maxwell, the physicist Szilard opened to information an unforeseen field of action: that of thermodynamics. In 1935 the statisticians, Fisher and Wald, gave it two new senses, which permitted the theory of induction to be posed in much more precise terms. In 1948 Norbert Wiener, and (independently of him) Shannon and Weaver reviewed Hartley's work and assured the full flowering of the theory of selective information, whose statistical character was to be studied by Kolmogoroff and Blanc-Lapierre. A little later Gabor related it to quantum physics and established its discontinuity.

This list is not exhaustive. The definitions of information form a fairly heterogeneous little population; certain of its members resemble one another strongly, while others have hardly any points in common. For lack of taking suitable precautions, a number of authors have wrongly confused Fisherian and selective information; others have confused Shannon's

"information cycle" with the cycles employed in the theory of measurement in physics. Properly adapted, the notion of Maxwell's demon is useful for comparing these diverse notions of information among themselves. But even here one must distinguish between the "instrumental demons" and the "selective demons." Without attempting to map this jungle, we may simplify matters and say that there are two distinctly different types of definition, each capable of being subdivided into several variants. These two types may be classed under the headings of selective information and semantic information.

II. Definition and Measurement of Selective Information

Selective information, or Shannon's information, is a quantity with which telecommunication operators—telegraph, telephone and radio networks—need to be familiar in order to sell their services at the fairest price. Selective information can be effectuated only by means of known symbols: letters of an alphabet, signs of a code, etc.

Like many other notions—that of mechanical force, of chemical affinity, electrification—the notion of information has progressed from the state of a confused sensation to the dignity of a scientific concept, passing from vague appreciation to the domain of measurement. The honor of having taken the first steps in this direction goes to L. V. Hartley, who suggested a process of choice by alternatives and proposed a unit of measurement to which, quite properly, his name has been given.

When he considered the problem of telegraphic communication, Hartley realized that the amount of information in a message made up of a single sign may be measured by counting the minimum number of yes-or-no answers needed to attain or define, by successive dichotomies, an element—corresponding to the signal to be transmitted—submerged in a group of other elements: for example, a word in a dictionary. The first dichotomy consists of dividing the initial group into two sub-groups and indicating in which one the sought-for element is located; the second dichotomy consists of dividing the sub-group chosen in the preceding operation into two other sub-groups and indicating in which one the element is to be found. The process is continued until a last sub-group is obtained which is made up of only two elements, for which a last dichotomy will indicate the element wanted. The number of dichotomies necessary to attain this final objective will be, by definition, the number of hartleys involved in the operation. To find a given card in a deck of thirty-two cards five alternative choices are necessary, i.e., five hartleys.

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It will be seen that the number of hartleys in a collection is equal to the logarithm to the base 2 of the number of elements in the collection. A message implying n choices among K symbols will carry a quantity of information which may be expressed thus:

$$I = n \log_2 K$$

The information might have been measured in various other ways. The use of a logarithmic expression is particularly convenient since it defines an additive quantity—one that is easy to handle. Developing an idea of Wiener's, Shannon later showed that the quantity of information transmitted in a message made up of letters may be measured by multiplying the frequency of each letter by the logarithm of this frequency and adding the products obtained.

Another measure of information which should be mentioned is the logon, a unit of structural information invented by Gabor, which is related not to the signals transmitted or the codes adopted but to the transmission channels utilized—somewhat in the same way as electrical resistance characterizes not the current but the conductor.

When one uses the hartley as a measure of information one is often surprised—at least in the beginning, for all surprise wears off in time—at the new insights it permits. It is edifying to familiarize oneself with this new type of scale and to note its breadth, which recalls that of the scale of electromagnetic waves.

Many technical and industrial mechanisms are based on the use of a single hartley; this is the case, for example, with the thermostat which regulates our gas radiators. It lights them or not, according to whether or not the critical temperature has been reached. It is also the case with many of our actions in everyday life, and with answers to administrative questions: sex (masculine or feminine), family status (single or married), etc.

If one assumes that a dictionary contains one hundred thousand words, its value is sixteen or seventeen hartleys. The human brain can reason at ten hartleys a second. The human ear is sensitive to a million hartleys a second, the human eye to five hundred million hartleys a second.

A great deal could be said on this essential notion of the measure of information. We shall limit ourselves here to a few remarks.

The first is that the fact that all information can be coded with a minimum of two symbols—with an alphabet of two letters, so to speak—constitutes the very principle of the Morse code.

The second is that this principle is utilized by very primitive peoples,

like the Congo tribes, who transmit complicated messages with long and short beats on tom-toms.

The third is that this dichotomous process forecasts the role of binary enumeration in big modern electronic machines. It is indeed perfectly adapted to "all or none" functioning.² Nervous action also operates through the "all or none" principle. From neuron to neuron, it is transmitted by the essential organs to the brain or by the latter to the motor organs, by means of signals in binary code.

III. *Information, Entropy, Energy*

Thus we know how to measure information, or more exactly, selective information. This is a prime factor for the guidance of research, since it gives us an unexpected lead into one of the best-developed disciplines of modern physics. Knowledge of how to measure selective information helped clear up the thermodynamic aspect of the theory of information—in particular, it established the fact that a piece of information can be assimilated to a negative entropy.

Along with energy, entropy is one of the two fundamental quantities of energetics. It is a simple entity, which certainly corresponds to something very concrete in reality. Unfortunately, it is not perceptible to our senses, so that one can familiarize oneself with its use only through an initiation and exercises which go beyond the framework of this study. We may say in general, avoiding the use of the mathematical notations of integral calculus, that an entropy (in Clausius's sense) corresponds to the quotient of a quantity of heat divided by a temperature; it is measured by dividing calories by degrees. Boltzmann showed that this quotient is equivalent to the logarithm of a probability—the probability that a process will end in one configuration rather than another. Thus entropy would be nothing more than the measure of the disorder in a system.

This comparison may seem surprising to the layman, but a little reflection will help to explain it. Heat is the cause of the agitation of molecules, and the temperature of a body represents the greater or lesser agitation of these molecules under the influence of a given quantity of heat. This molecular agitation tends to modify the structure of the body, and entropy represents the probability that this agitation will determine one or another more or less regular structure. Entropy is thus related to heat and temperature on the one hand and to structural order on the other.

It is also easy to understand that the notions of entropy and information

2. An electric or electronic current passes, or does not pass, through a conductor or a tube.

are related. Imagine a collection of elements in a disorderly mixture. This disorder would only be apparent if we had a means of locating at will, and without ambiguity, any one of the elements in the mixture. The collection would then be, if not orderly, at least capable of being ordered.³ Ordering will be possible if we possess a sufficient amount of information about the collection, whether this information is measured in hartleys or in any other scientifically equivalent way. As an instrument for putting collections in order, information is then, like entropy, a measure of order.

It was Szilard who established the connection between information and entropy. In demonstrating it, he turned to the celebrated parable of Maxwell's demon. This parable deals with an imaginary experiment whose aim would be to separate a certain mass of gas, of uniform average temperature, into two portions having different temperatures.

Suppose that the gas is held in a closed container divided in half by a partition pierced with tiny holes. Each hole has a stopper. Each hole is also guarded by a "demon" who keeps watch over what goes on around him. The demon is able to follow the erratic gyrations of each molecule, to gauge its speed and foresee whether or not it will come toward the hole he is guarding, and to open or close the stopper before the molecule reaches the hole. Thus he can bar the way to the slower molecules and open it, or leave it open, to the more rapid. If he carries out these instructions for a certain length of time—without himself intervening to change the direction or speed of any molecule, except when he bars the way to the slower ones—the faster molecules will all eventually be on one side of the partition and the slower ones on the other. The gas will thus have been divided into two portions of unequal temperature—or, what amounts to the same thing, a beginning of order will have been substituted for the initial disorder.

Szilard showed that it is possible to preserve the validity of the Second Law of Thermodynamics (Carnot, 1824) by admitting that the entropy lost during the separation of the low-energy and high-energy molecules constitutes the price paid by Maxwell's demon for obtaining information and transmitting it to the observer of the experiment. Szilard's argument goes far beyond discussion of the parable of Maxwell's demon. It shows us that every experiment which permits us to obtain information from a physical system is paid for by an increase in entropy—that is, by a decrease

3. Certain intellectuals will not permit the "disorder" of their papers to be regulated, because they know how to find their way through it; what appears to the layman to be disorder is, for them, order.

of structural order—in this system or in its environment. To observe a phenomenon is to change its order.

Selective information is thus assimilated to an entropy. Only—unlike all the phenomena to which physicists were previously accustomed and which have as their basis a positive entropy, that is to say, a tendency to disorder—information presents itself as a negative entropy, that is to say, a generator of order. Wiener and Schrödinger, working independently of each other, both noted this. Instead of saying “negative entropy,” some people adopt Léon Brillouin’s term, “negentropy.”⁴

Is information identical with a negative entropy? It would be more exact to say that these two quantities are in any case of the same nature, homogeneous and exchangeable one for the other, as are mechanical work and heat or mass and energy.⁵ This means that the real second law of energetics should be expressed thus: “The sum of the negative entropy and the information in a closed system can never increase.”

What should be remembered, in any case, is that information is not energy, but that it cannot be physically separated from energy. No matter what the adepts of telepathy may think, thought cannot be transmitted through space at a speed faster than that of light. But, of course, the necessity for an energetic support does not mean that this support is considerable. As is well known, the phenomena with which neurophysiologists or linguists are concerned involve energies which are ridiculously weak. What is interesting in these phenomena is not their consumption of energy but their production of negentropy—that is, their aptitude for ordering structures.

Forgetfulness of the fact that all information is accompanied by an expenditure of energy and entropy, which may be very small but is never nonexistent, may result in sophisms or errors, of the sort which would lead one to believe that the total quantity of information may be multiplied freely—and thus indefinitely—because the same book or the same phonograph record is sold to a larger and larger number of readers or auditors or because the same radio or television program is picked up by a larger and larger number of people. The dissociation of information and negentropy which seems to characterize these examples is only an apparent contradiction of Carnot’s “generalized principle.”

When one reads a written text or listens to a record, one needs a source

4. Sometimes, but much more rarely, with other authors: “ectropy.”

5. Information may be measured in units defined as above, or in thermodynamic units of entropy. Each unit of information is equivalent to an entropy equal to $K \ln 2$ —that is, about 10^{-16} thermodynamic units.

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of light to illumine the text or a phonograph motor to turn the record. What is furnished by these means is not only energy, but negentropy. This circumstance limits the possibility of an indefinite multiplication of information, but it often goes unrecognized because of the small quantities of energy and entropy involved. "All machines for printing, reproducing or reading information," writes Léon Brillouin,⁶ "have such a small output of entropy that this essential fact has always passed unnoticed. All of modern life is based on the possibility of multiplying information at a minimum cost"—but not for nothing. This discussion may lead us to distinguish two new types of information: "absolute information" and "distributed information."

There is another error which must be avoided when applying this notion of negative entropy to biological, psychological or social phenomena. Entropy is a statistical notion. To speak of the entropy of a living being—insofar as he constitutes a living unity, and consequently an isolated and elementary system—makes no more sense than to speak of the average of a single experiment. On the other hand, it is legitimate and useful to speak of the entropy of a living being insofar as he is made up of a population of cells, molecules, atoms, etc.

After matter, electricity, light and energy, or, rather, action, entropy and information have come within that field of measurement which corresponds, indubitably, to a universal and profound reality, and whose consequences are manifest even in the problems of living tissue and those of heredity and thought.

The smallest quantity of negentropy necessary to obtain an "atom" of information⁷ is $0.7 k$. The letter k represents Boltzmann's constant and is equivalent to 1.38×10^{-16} thermodynamic units. Thus, outside of the limitations which Heisenberg's Principle of Uncertainty—related to Planck's quantum of action, h —brings to our knowledge of the outside world, there exists another limitation to our capacity for experimenting: it is related this time to Boltzmann's k constant.

Dennis Gabor has done penetrating work on this discontinuity of information and on its interpretation in terms of wave mechanics. Like

6. "Principe de Négentropie pour l'Information," in *Louis de Broglie, Physicien et Penseur* (Paris, Michel, 1953), p. 368.

See also the same author's article in the *Journal of Applied Physics* for May, 1954.

7. Sometimes the term "bit" is used—an abbreviation of "binary digits."

Jean Ville, he replaces the representation of signals through real numbers by a representation through complex numbers. He has also shown the complementary character of temporal and frequential analysis of signals.

IV. *The Theory of Communications*

From the notion of selective information we pass quite naturally to that of communications. Historically, the theory of communications is prior to the idea of information; the latter was conceived, indeed, to give a solid foundation to the technique of telecommunications. A communication is a transfer of information. A communications system is a circuit, or a network formed of several circuits, which permits information to be transported over a distance. This information is coded, that is, transformed into signals (electrical, acoustic, optical or other kinds) which can be physically transmitted over the circuits of the networks. By communications systems I do not mean only telephone networks⁸—whose structures have been studied, but which do not pretend to be absolutely universal models—but the most diverse forms of networks: mechanical machines, administrative structures, and nervous systems.⁹ When a storm damages a telephone line, when the police disrupt a resistance "network," communications are cut. In the same way, cerebral communications are permanently cut by the psychosurgeon when he performs a lobotomy, or temporarily cut by the psychiatrist when he has recourse to electrical or chemical shocks.

It should be noted at this point that there are enormous differences between the brain and the systems of communications created by technicians. The brain is not so much like a single circuit—extremely complicated, well defined, and consequently rigid—as it is like an immense and partly undifferentiated network in which the available circuits may be rapidly grouped and devoted for a limited time to definite tasks.

The possibility of measuring selective information and expressing it in terms of entropy permitted a mathematical theory of communications to be developed. Its mathematical character may be a serious obstacle to its use by physiologists or specialists in the human sciences, but the obstacle is not insurmountable. A part of these mathematical theories, and often the most modern part—like Boole's algebra, which Shannon applies to

8. Telecommunications networks use a special method of transmitting messages. Signals circulate as modulations (amplitude, frequency, etc.) of a sinusoidal current.

9. Attempts have even been made—without great practical success so far, it must be said—to consider the propagation of such a slow geological phenomenon as the formation of a mountain chain as a kind of transmission of information.

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the communication of electric circuits, or like the "Markoff chains," which relate to the calculation of probabilities—is relatively easy.

The notion of noise plays an important part in the theory of communications in generalizing and formalizing the ordinary phenomenon of background noise which may interfere with the audibility in a lecture hall or of a telephone conversation.

Noise is any alteration which comes from the superposition, on a message, of signals which are foreign to that message. A noise is a positive entropy which may be algebraically added to the negative entropy of the information; it is disorder superimposed on order. Noise is usually a regrettable natural phenomenon, but it may also be emitted intentionally, as is the case with the "jamming" of a hostile radio or the misleading of a secret service through false news. At a theoretical limit—and, in most practical cases, long before this limit was reached—an infinite noise would make it impossible for the communication to be realized. The problem of restoring information lost by distortion or drowned in a noise—a problem which has been studied particularly by Wiener and Kolmogoroff—seems to me likewise deserving of attention, because of the biological and psychological phenomena in which it appears.

As has just been pointed out, information cannot be created out of nothing; it can be created only on the basis of earlier information which permits us to foresee the structure of the message. A flow of pieces of information which arrive one after the other may be stored in a memory (animal or mechanical) without producing any result, until another piece of information, which plays the role of a crystallizer where the preceding parts are concerned, produces an effect which may be imputed not only to the last piece of information, but to all those that have preceded it. This is the case, for example, with a mystery story, in which a revelation made on the last page explains and permits the reader to organize the incomplete information disseminated throughout the preceding chapters. The process operates as if each of these revelations were less a piece of information than a fragment, the last one giving meaning to the whole, as the last fragment of a torn-up banknote must be glued into place if the note is to be accepted at its face value. In the field of physics, these phenomena may be compared with the relaxation waves so ingeniously studied by Van der Pol.

It was Shannon who, in 1949, worked out a fundamental formula expressing the capacity of a communications line in which a noise is involved. In 1950 Gabor succeeded in accounting for the element of noise in the

mathematical theory of communications which he had developed in 1946. This theory is valid in a discontinuous field and includes recourse to a function analogous to the wave function in wave mechanics.

V. *Information, Experiments, Induction*

Born out of the reflections of telephone technicians, the notion of selective information went through a brilliant metamorphosis at the hands of pure physicists and mathematicians. Two masters of the calculation of probabilities, R. A. Fisher and A. Wald, proposed two new definitions of information. Though somewhat similar, these two definitions are distinct from each other and closely connected with selective information. They deal with the possibility of systematically interpreting experiments in order to draw laws therefrom, and thus permit the theory of induction to be related to the theory of information. Fisher's information deals with the limit of precision of an experiment whose aim is to estimate an unknown quantity. Wald's information is associated with the number of observations which an experimenter would have to make in order to decide between two hypotheses.¹⁰ The relation is clear between these two types of information and selective information.

According to Wald's theory, a certain "weight" may be given to any observation. This is what the layman tends to neglect. And thus it happens that victims of the "flying saucer" myth believe in all good faith that they are taking a scientific and progressive attitude when they point out that there exist a certain number of observations relating to unidentified objects or lights, and that the honesty of experimental rationalism demands that these cases be discussed. In reality the opposite is true. Observations which were not made in a scientific manner, and which, in particular, were not recorded with precision, do not merit being taken into account. Each of them has a "weight" of zero, in Wald's sense, and no matter how many zeros are added together, the sum is still zero.

VI. *Towards Subjectivity*

The different types of information which we have just sketched may be defined by a series of choices in a finished collection of symbols or experiences. Through this fact, all subjectivity is ruled out. Information may lead to knowledge, but it is not knowledge.

10. For example, to find in three weighings—without the use of weights or tares—a counterfeit coin mixed with twelve good ones.

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A second type of information, semantic information or meaning, brings us considerably closer to subjectivity, if it does not immediately plunge us into it.

This higher level of information corresponds—in the case of human communications—to the moment when signals leave the acoustical, electrical or nerve circuits in which they have been circulating, and reach a mental receiver, where they acquire a meaning.

Selective information became measurable because the point of view of understanding was replaced by that of extension. Instead of analyzing the content of a message, the observer was interested in the manner of distinguishing this message in the ensemble of all possible messages. In semantic information it is the point of view of understanding which takes the guiding role. This point of view gives semantic information its particular savor as well as its weakness.

Semantic information, or meaning, has already been the object of serious studies and discussions, but up to now it has never lent itself to measurement. There is no mathematical theory which applies to it, nor, except as a hypothesis, which is quite valid, any energetic interpretation. What can be said, then, of the "personal information" which Charles Morris¹¹ prefers to call "pragmatic information"—which is situated beyond semantic information and penetrates, or claims to penetrate—into subjectivity?

In semantic information, the recipient of a message understands the same thing as the sender of the message and the other recipients. What characterizes personal information, on the contrary, is the special content which the recipient adds to the semantic information by virtue of his personal mental structure, his own experience, etc. Personal information is certainly linked closely with this "evocative function of language" which must be distinguished—as is pointed out by A. Sauvageot, to whom we owe this latter notion—from its "code function."

Psychologists, sociologists and linguists are doubtless more attracted by personal and semantic information than by selective information. They would probably be delighted to abandon this last field to the telephonists in exchange for a coherent theory of the first two, which they could apply to their own research. The unfortunate thing is that when we leave the solid ground of measure, and also that of energetics, we enter, if not into

11. In *Foundations of the Theory of Signs* (Chicago, University of Chicago Press, 1938), p. 30.

philosophy, at least into science in its embryonic stage. The present development of our knowledge in this field does not yet include enough positive elements to give hope of fruitful harvests for a long time to come.

Does personal or pragmatic information hold enough points in common with semantic information or meaning, and the latter with selective information? If so, what are the rules of the game that is played in moving from one to the other? Are the first two measurable, like the third? Can they be considered as negentropies, or, at least, as physical quantities interchangeable with negentropy? The answers to all these questions are yet to come. "How does an idea get into our minds?" asked Voltaire. That is the whole question, indeed. When, through laboratory research, we are able to ascend the ladder which goes from acoustics and optics to the anatomy and physiology of the eye, the ear, and the other senses, to the vocal chords and muscles, continues to the motor and sensory nerves, the spinal cord, the medulla, the hypothalamus, the reticular system, the cerebral cortex, and ends in the study of psychological and social behavior, of the laws of thought and language, then we will doubtless solve these major problems and be able to say whether entropy continues to play an enlightening role at the level of subjectivity or in its immediate neighborhood.

It should also be noted that—from acoustics to linguistics—the classification we have just outlined does not necessarily correspond to the assemblage of the real circuits, to the disposal of their connections or to the order in which information circulates in them. Even if one does not take into account recent affirmations concerning the possibility of perceptions outside the brain—affirmations which are without serious foundation—the fact remains, nevertheless, that certain grafts of sense organs, like those carried out by Paul Weiss, give food for reflection. They seem to show that in the lower animals, like the batrachians, certain sensations are not constructed entirely in the brain and that, for example, the "cyclops eyes" grafted into the backs of these animals can reconnect themselves with other nerve centers. One must, however, guard against hasty generalizations. The frog's brain is not a model of its type—the animal's spinal cord and bulb are more useful to it—and the rather elementary reactions which have been noted do not suggest that the "cyclops eye" is capable of very remarkable performances. It seems difficult to explain integrations of a high level without bringing in the cerebral cortex, the hypothalamus, the reticulated system and other formations of the brain.

VII. *Adaptation to Circumstances*

To transmit information through a communications system is one thing, but is not all. There remains the problem of utilizing this information, either to undertake an action—the action of a steam engine, of a larynx, of a poet or of a labor union—or to modify this action while it is being carried out. At this point the theory of control comes into play, the study of servo-mechanisms and of such technical notions as those of feedbacks, scanning, and reverberating circuits, which are enjoying a well-deserved vogue at present, in spite of the abuses to which they lend themselves. We shall not concern ourselves here with elementary controls, which—as in the servo-motor constructed more than a century ago by Léon Farcot—consist of transmitting through a powerful motor a directive conceived by a man.

Let us imagine a machine equipped with organs capable of detecting the differences (or errors) with relation to a goal which has been assigned in advance, and capable also of sending this information to the motor organs (generally known as "effectors"); let us imagine, too, that these effectors are capable of taking this information into account and setting the machine in the right direction once more. Such a machine is a servo-mechanism, a term which means that the machine has a motor organ subordinated to an organ of control. The apparatus which can measure the lack of adaptation during an operation, and inform the effectors of it in a way from which they can profit, is known as a feedback. Positive or negative, according to whether it contributes to increasing or diminishing the motive energy called upon, it is necessarily constituted by a reactive circuit grafted onto the principal circuit. It should be noted that this reactive circuit will not be advantageous unless it consumes very little energy as compared with the energy sent into the principal circuit.¹² The elements capable of detecting the differences may be the balls of Watt's regulator, photoelectric cells or radars, our eyes or ears, a military espionage group, an institute of economic analysis—in all these cases the process of regulation is based on the same principle. And, as Pierre Auger has remarked, the chief advantage of oral teaching over the reading of a manual—no matter how well the manual may be written—is in the feedback which links the professor with his audience and permits him to adjust the schedule of his course. O'Connor, who in 1953 tried to define "linguistic units," analyzed the importance of the audience in the clarity of spoken language.

12. The word "circuit" is obviously borrowed from electrical terminology. But it remains valid when one is speaking of the nervous system or of social arrangements.

The success of Grey Walter's electronic "tortoises"¹³ is due to feedbacks. So is that of Shannon's "mouse" with conditioned reflexes (1952), which, after it has once made its way out of a labyrinth by the trial-and-error system, can get out of the same labyrinth a second time without hesitation. The same thing is true of the machine which A. E. Oettinger constructed in 1952 and which, besides having a capacity for "learning" and "remembering," is also endowed with a sort of "curiosity." Another case is Fromme's "bee," which can imitate the behavior studied by von Frisch. At a higher level, a combination of several feedbacks makes it possible to assure the homeostasy¹⁴ of a system, that is, its ability to recover its equilibrium when this equilibrium is lost as a result of outside causes. Although the epithet, "plan for a brain," used by its author seems somewhat excessive, Ashby's first homeostat, with its four electro-mechanical servo-mechanisms, was already capable of avoiding simple traps. Still more impressive results may be expected from his super-homeostat, the dams (Dispensative and Multiple System), an electronic device which will interconnect one hundred elements and be capable of recovering its stability within a reasonable time. We are still far from the approximately 10^{10} neurons of the human brain. But science sometimes progresses very fast. A few years ago MacCullough remarked that if a calculating machine had as many electronic tubes as our brain has neurons, it would occupy a volume comparable to that of the Empire State building and could consume all the energy produced by Niagara Falls. With transistors, the same machine could be comfortably installed in a house a few stories high and consume only a few hundred kilowatts.

One can see how much the process of adaptation through the feedback has added to the potentialities of the old machines, as H. S. Black, in 1924, and Nyquist, in 1932, first pointed out.

We must not, however, fall into the error of seeing feedbacks everywhere by confusing them with simple reactions. The feedback, essentially, characterizes living beings or machines made by man. It very rarely appears in natural phenomena, which, on the contrary, are generally governed by reaction. When an oceanographer, M. J. Dunbar, shows us that the Gulf Stream turns in its course as it passes near coasts which direct it to the open sea; when organic chemistry reveals the equilibria that operate between opposing causes (as, for example, between etherification and

13. It should be clearly understood that all the words in this paragraph which are placed between quotation marks are to be taken only as images.

14. Walter B. Cannon is responsible both for defining the notion and applying the term.

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hydrolysis); when physical chemists refer to Guldberg and Waage's law of action of mass; or when city transport technicians study the rate of delay of buses at rush hours, it is not feedbacks which are involved, but ordinary reactions.

Furthermore, valuable as it may be, the notion of the feedback is not the only one which explains the success of servo-mechanisms. It is obviously enormously useful to be able to note the discrepancy between the goal desired and the effect obtained, and to transmit this information to the effectors so that they can make use of it. But that alone would not be sufficient to solve all the problems. In particular, the machine may need to consult a store of information in order to find among a number of useless items the one which is necessary to solve the partial problem posed at that particular moment, thus permitting further progress toward the desired goal. This may be achieved through use of the scanning process, which is a perfect tool for applying Descartes's fourth rule of method.

In this process, an instrument of detection—an electronic brush, a photoelectric cell, a blade of metal, or the eyes of an archivist in a library—makes a complete survey, once or several times over, of all the elements within a certain field of realities. When the detector passes by the element which is sought, it informs the effectors, which turn this information to their own use. Through neglect of the scanning process, we may when absent-minded stumble in the street. On the other hand, the chess champion who successfully plays a hundred games simultaneously obtains good results only because, as he reaches each position, he is capable of exploring it completely and rapidly: this aptitude for scanning is a necessary, but insufficient, condition for the formation of an accurate idea and a winning decision.

In certain cases it may also be indispensable to lay aside this information for a certain length of time (not only because it could not be used during that time, but also because its intrusion might confuse the decisions of the effectors), and then to call on the information at the opportune moment. A really perfected machine should be something like a meeting. In a meeting it would be inconvenient if everybody talked at once, but it would be regrettable if any participant desiring to present interesting observations could not get the floor at the opportune moment. But how is a spatial structure to be transformed into a temporal succession of signals? How can information be stocked by transcribing time into space?

Such services cannot be performed by "static memories." Whether they take the form of dictionaries, files, weaving looms or mechanical pianos,

there are many cases where these "passive" memories could not be used. They can, at most, be used as bases for processes like scanning. Recently "dynamic memories" have been brought into play. They are usually made up of reverberating circuits capable of registering an impulse which goes around them indefinitely, without changing, until such time as the command organs of the machine decide to interrogate them.

These circuits are generally made up of an emitter, E; a tube, AB; a receiver, R; and another tube, CD. The emitter, E, transforms into Hertzian waves of the same frequency the oscillatory phenomenon whose rhythm is to be conserved for a certain time. This wave goes from A to B at the speed of light, which may be considered as practically infinite. As it leaves the first tube, at B, the electromagnetic wave is transformed by the receiver, R, into a supersonic wave which enters the second tube at C. It goes from C to D at the speed of sound, which is considerably less than its earlier speed, so that the signal arrives at D in a time which is no longer negligible. On leaving D the supersonic wave is picked up by the emitter, E, and induces the same Hertzian wave which left E at the beginning. The same phenomenon may be reproduced indefinitely as long as energy is supplied to the circuit. Thus we have an impulse which goes round and round, sometimes in an electromagnetic form, sometimes in an acoustical form, until some outside agent comes to "consult" it, and, if indicated, frees the circuit.

In servo-mechanisms, adaptation to the goals to be achieved is usually made by respecting simple principles. This does not prevent processes like feedbacks, scanning, and reverberating circuits from constituting very ingenious means of realization. Feedbacks can do no more than raise or lower a level, add or subtract speed, increase or decrease an angle, a voltage or an amperage. No more than this is needed to permit a "proximity fuse" airplane to follow the zigzags of another airplane and overtake it, or to permit "Joe," the automatic pilot, to keep his plane on its course despite the caprices of the wind; to equip a radio receiving set with an anti-fading device; to control the pressure or the carbonic acid content of the blood; to regulate the necessary and sufficient dosage of anaesthetic according to the encephalogram of a patient on the operating table; or to assure the functioning of the automatic assembly plants designed by W. Leaver and J. J. Brown or of the completely automatic factories already functioning in the U.S.S.R. The achievements of the feedback are impressive, and new ones are being added almost every day. Let us not ask it to produce miracles which transcend its nature and go beyond its possibilities.

VIII. *Choice and Decision. The Theory of Strategic Games*

There are cases where it is much more difficult to make a choice and know how to decide for the best. All the feedbacks in the world would be of little help in a bridge or canasta game or in a business or political enterprise. It is at this point that the theory of strategic games becomes useful. We should note that this new chapter of science appeared outside cybernetics and the theory of communications and pursued an independent existence before joining them. Without stopping to credit precursors¹⁵—historical justice has no place in this brief study—we may say that this theory began with a celebrated work by von Neumann and Morgenstern, *Theory of Games and Economic Behaviour*, which appeared in 1944.

By "strategic games" we mean games whose results are not entirely determined by chance, as in roulette, but in which the players are required to make choices and carry out reasoned decisions. Besides the element of reason, these games may also contain a greater or lesser element of chance. This is the case, for example, with many card games: bridge, poker, etc. In other cases, chess, for example, the element of chance is almost entirely eliminated.

The interest in the study of games goes far beyond their entertainment value. Strategic games give us models which we can sometimes transpose into biological or social terms. It was a problem of economic measurement which furnished von Neumann with the occasion for beginning his research. The systematic study of poker—or rather of another game which is a little simpler, but very much like it—showed that it is possible in certain cases to deduce mathematically the element of bluff. This form of behavior, by its very nature, might have seemed beyond mathematical deduction. It is quite possible that the studies undertaken with the aim of constructing a chess-playing machine are being kept secret for military reasons.

The strategic games which it is easiest to study, because they are the simplest, are two-player games, or "duels." Von Neumann and Morgenstern call them "Zero-Sum Two Persons Games," games in which the losses of one player are exactly made up by the gains of the other. If each of the two players was capable of imagining all the variants possible on the basis of his position, he might discover whether or not there existed a line

15. We should, however, cite Emile Borel in one field, and Bascall and Edgar Allan Poe (apropos of games) in another; and also Buffon, Condorcet, Poisson, and Cournot in connection with the probabilistic study of judicial decisions, electoral laws, commercial competition, etc. As early as 1928, von Neumann demonstrated a theorem into which enters the notion of "ruse."

which would lead him to win (or at least make the game come out in a draw), no matter how his adversary countered his plays. Such a line is called a "strategy." To play is to choose a strategy.

In a thesis presented in 1952, entitled *Theorie des Jeux alternatifs*, Claude Berge showed that the search for a strategy is closely connected with the algebraic theory of the semi-lattice.¹⁶ The theory of alternative games may be applied to the pistol duel, in which the two adversaries walk toward each other, each having to decide at each moment whether he will fire in order to try to hit his opponent first, or whether he will wait till he comes closer in order to be surer of making a hit. The same dilemma presents itself in airplane encounters. In certain cases and within certain intervals the theory may lead a strategist to disregard the pilot's psychology and allow machines which choose at random to decide at what distance the planes should open fire on their opponents.

The case of more than two players is much more difficult to analyze, since coalitions are possible.

Without going further into the examination of the theory of strategic games, we should note that this theory has now been related to the theory of communications. In his 1952 thesis, *Theorie mathématique des Communications*, Benoît Mandelbrot had the perspicacious notion of considering the theory of communications—and in particular the theory of language—as a game with three players. These three players are the emitter, nature and the receiver. Their roles and the aims they propose to attain are not symmetrical (a situation unlike that found in many games). The emitter and the receiver form a coalition against nature. Nature seeks to falsify the messages sent between the two other players: she introduces noise. Note the complexity of this analysis. In the beginning of this study we called attention to the diversity of the definitions of the notion of information. In the case which concerns us here, nature is capable, by making noise, of altering Fisherian information; selective information, on the other hand, continues to go through. Furthermore, nature can be considered a player only within certain limits.

That is not all. Having succeeded in giving the theory of communications a place in the theory of games, Mandelbrot proposes to show how, understood in this context, the theory of communications can be broken down into three games for which there are three corresponding theories:

The game between the emitter and nature characterizes thermody-

16. A semi-lattice is an ordered group—that is to say, a collection of elements in which a (partial) relation of order can be defined—in which there exists an operation by which a third element can be associated with any two elements.

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namics. A steam engine "plays" a game between heat and work, with nature intervening to lower the output.

The theory of decoding—which covers the deciphering of secret writing as well as that of dead languages—is a game between nature and the receiver.

The use of language is a game between the emitter and the receiver. In a well-constructed language the emitter and the receiver cooperate, so that the information is transmitted at the lowest price. Statistics applied to languages confirm this. The point is taken up in a very original work by K. Zipf, *Human Behaviour* (1949), which might well serve as an interesting basis for a further study.

Besides Mandelbrot's work, other attempts have been made to connect the theory of strategic games with that of information. A. Wald has studied a game which opposes the statistician to nature and tries to find models in it for his theory of induction.

IX. Cybernetics and Life

The old attempts to work out mechanico-physico-chemical explanations of life were hampered by the lack of complexity and finesse in the classical machines. The new mechanisms, with a far greater wealth of coded information in their structure, equipped with various means of control, capable even of comparing strategies, thanks to electronically computed calculations, have considerably narrowed the gap. The striking contrast between living and inanimate matter; the numerous regulating processes which maintain the internal equilibrium of organisms; the processes of perception and motor coordination which assure the extent and effectiveness of our action on the outside world; the mechanisms of consciousness, memory and reasoning which preside over the most complex operations of thought; the laws of spoken and written language which so strongly condition our social relations—all these phenomena can from now on be advantageously interpreted in terms of cybernetics. One may describe them as actions; these actions may in turn be symbolized by calculations (Ashby, 1947); these calculations may be reduced to fundamental groups of operations (Turing, 1936); and these last may all be realized by machines.¹⁷ In this second part of our study we shall limit ourselves to four examples.

17. In some of these problems, the penetration of biology by the exact sciences is illustrated by the complementary character of the specialists who collaborate in the same research. Thus it was a mathematician, Norbert Wiener, who first advanced the hypothesis that if the organism uses negative feedbacks we should expect to find pathological troubles with oscillat-

To begin with, the theory of information permits us to consider, from a suggestive angle, the problem of living matter, or more exactly, the problem of the way in which its functional properties are linked to its structure. The explanation of the mystery probably lies in the very great quantity of information which might be said to be inscribed—coded—in the architecture of living matter. According to this hypothesis, all living matter would contain a very elaborate “taping” (or set of prescribed regulations) which would prevent it in a great many cases from behaving with the sort of indifference which governs physico-chemical phenomena. Hence this appearance of finality which impresses so many metaphysicians. But is not a record—a simple musical record, which succeeds in inscribing in the variations of its sound-track all the magic and individuality of Vivaldi or Alban Berg—already a very impressive object? Furthermore, the fact of giving forth order, that is to say, of producing a negative entropy, would not contradict (let us avoid mystical reveries here!) the Second Law of Thermodynamics, which says that the entropy in an isolated system tends to increase. For life is not a closed system; it is open on an environment, and it remains subject to Carnot’s inviolable law, by paying to the surrounding inanimate world, with which it carries on exchanges of energy, this negative entropy which, to use Schrödinger’s expression, “it feeds on,” and which, as we first become aware of it, strikes us with wonder.

The mere concept of a “taping” may clear up more than one enigma in biology. There would be no need, for example, to have recourse to a naïve theory of incasement of germs to explain how the development of a many-celled organism may be partly determined in advance by the genes of a single initial cell.

Not only the notion of taping, but also those of the feedback, of reverberating circuits, and of other auxiliaries of servo-mechanisms may render great services in physiology.

Neither the neurophysiologists nor even the man in the street waited for the theory of communications to speak of “blocks,” or “switches” (in the case of the scientist), or of “having self-control” or “losing track” (in the

ing structures, and who, applying Van der Pol’s calculations, predicted their forms. It was a physiologist, Rosenblueth, who discovered them experimentally; they are the clonic spasms of stretched muscles or the ataxias of the cerebellum. Cooperation of the same type associates mathematician W. Pitts with the neuro-physiologist W. MacCullough. At times, a single scientist combines fields of competence that are usually separated. W. R. Ashby, a psychiatrist by profession, handles figures with talent. All those who have met Norbert Wiener have been astounded by the versatility of his culture.

case of the man in the street). On the other hand, technicians of servomechanisms or electronic calculating machines use terms like "post-mortem diagnosis" or "frog-jump test" when discussing breakdowns or characteristics of these machines. Can we find—if they exist—the mechanisms that are probably hidden behind these images? It seems likely, since N. Rashevsky—to whom we owe some original insights in mathematical biophysics—showed in 1938 that abstract models of electronic circuits can manifest certain properties of nerve circuits.¹⁸ Furthermore, it may not be suitable to express all these problems in purely spatial terms. In 1906 Sherrington formulated the hypothesis that "Pure conjunction in time, without there being necessarily a cerebral conjunction in space, is at the base of the solution of the problem of the unity of the mind." The hypothesis is still valid and can surely be extended to other mechanisms.

Another question arises, that of memory—I mean animal and human memory. Is it static or dynamic, or does it belong to another order of things?

It is hardly probable that our memory is static. It has been calculated that if our brain had a "catalogue of perforated proteins" which it consulted by scanning, it would work 10^{13} times more slowly than it does in reality. We cannot guarantee this calculation, but it seems probable. And then there is the well-known fact that the loss of a very great quantity of brain matter does not necessarily result in a great loss of memory.

The thesis of a dynamic memory is certainly more attractive. Advanced in 1929 by Alexander Forbes and in 1930 by S. W. Ranson and J. C. Hinsey, it is defended with virtuosity by Lorente de No and von Foerster. The non-punctual *Jetzt*, or specious time of the psychologists—the time during which one retains a part of the past and considers it as the present—suggests a dynamic memory far more than a static one.¹⁹ However, recent experiments show that the question is not yet solved. Animals have been chilled to temperatures which are considered far below those that could be withstood by neuronic reverberating circuits, and, after they are returned to normal temperature (when these circuits should have been destroyed), the memory remains. The problem of explaining the phenomenon of

18. These comparisons have been pursued by Warren MacCullough, who established them on probabilistic bases.

19. According to MacKay (1950), the sensation of the passage of time may be nothing more than the appreciation of the greater or smaller flow of information that penetrates our consciousness in practically continuous fashion. As François showed in 1927, this sensation is linked with the temperature of the body; and, according to Hoagland, the latter regulates the rate of oxidation of certain glucides in the brain.

memory thus remains open, but there is no doubt that cybernetics has shed fresh light on it.

The same thing is true of the problem of form—Gestalt.

How does it happen that we recognize an object by its form, independently of its position (which alters the appearance of the form) or of its dimensions? Similarly, how do we recognize the voice of a friend? Such a phenomenon obviously depends on the comparison which we establish between the information furnished by the object at the moment we are looking at it, or by the voice at the moment we hear it, and information which has previously reached us from the same source and been stored up in reserve. But a purely analytical comparison is not enough to explain the phenomenon of recognition; to account for it one must admit that it is possible to describe a structure in terms of information.

In demonstrating the possibility of this translation—which in 1947 W. Pitts and W. McCulloch related to the invariability of the behavior of a mechanism toward a particular transformation group²⁰—cybernetics has extended to machines a privilege which might have been thought to be a monopoly of life. Certainly most of the Gestalt devices, like the automatic readers (machines for reading a written text aloud) and the automatic stenographers (machines for writing a spoken text) are still in the projected stage, and it would be vain to expect that mechanical perception will quickly reach human finesse. But machines can be envisaged, even now, which would be capable of recognizing structures that man is powerless to discern—for example, spatial structures having more than three dimensions, or topological structures. These machines will be, from the very beginning, superior to man.

The apprehension of meanings—a continuation of the recognition of structures—and, beyond that, the phenomenon of consciousness, which crown the edifice of psychology²¹—are they to be considered as nervous integrations in which all the preceding notions play a role? How many of us answer this question with assurance, revealing thereby a belief in some philosophical position whose truth remains to be demonstrated! Science alone—which pronounces only on that which knows—remains mute on

20. "Transformation groups" are mathematical notions which play an important role in many natural phenomena.

21. We do not assume in any way, here, a substantial existence of the consciousness. If we suppose that consciousness is only an "illusion" which should not be taken into consideration in building an objective psychology—as certain of the behaviorists believe—then this appearance nevertheless requires an explanation. Optical illusions have a real existence, as illusions, just as do erroneous beliefs.

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this subject. Nevertheless, the assimilation of thought to a complex nervous phenomenon seems, without a doubt, to constitute the best working hypothesis. How, for example, can one fail to be impressed by the correlation which appears to exist between the rhythms of electrocerebral waves and the time needed for the establishment of states of consciousness?

X. Reasoning Machines, Playing Machines, Machines That Reproduce Themselves

There is no space in this article to study the relations among cybernetics, phonology and linguistics. They involve the important notions of redundancy, frequency and continuity, and—though “Markhovian machines” capable of writing “mechanical novels” have not yet made their appearance—they have already led to some remarkable achievements, such as Audrey (the telephone which forms the number pronounced in front of it without the user’s having to touch the call dial), the Vocoder and the Voder (which permit the reconstitution of the human voice) and the Automatic Translator (of which some, like the I.B.M. 701, have been in use for more than a year and are already much more than automatic dictionaries, since they take grammatical structure into account).

Nor shall we discuss here the modern numerical or analogical calculating machines. They belong to a specialized field, in general better known. Though based on similar principles, the reasoning machines are more interesting because their accomplishments are less specialized.

MacCallum and Smith’s logical machine (1951) can combine seven different variables through the use of six logical relations: “not,” “and,” “or,” “or else,” “if, and only if,” “if then”—which permits it to consider 128 possibilities. Here is an example of the type of reasoning which it can carry through:

“It is known that merchants always tell the truth and engineers always lie. G and E are merchants. E says that D is an engineer. A declares that B affirms that C states that D says that E emphasizes the fact that F denies that G is a merchant. If A is an engineer, how many engineers are there among the other persons mentioned?”

Such machines have already gone beyond the purely theoretical interest of logicians’ games. They can facilitate the establishment of insurance contracts containing special clauses involving risk of litigation.

The battery of playing machines—which only a few years ago was limited to the automatic chess player invented by Torres y Quevedo and capable only of checkmating by King and Castle an opposing isolated

King—is being enlarged every year. The field of the newcomers extends from geometric or logical structures to purely psychological games.

At the British Festival of 1951, visitors to the Science Hall could—without the slightest chance of success, unless they played first—play a game of Nim against a machine called Nimrod, constructed by the Ferranti firm. Despite the simplicity of its rules, the game of Nim has close analogies with the laws governing the economy of a country which is neither entirely under the regime of monopolies nor entirely under that of free trade.

We have already mentioned chess-playing machines. Two different types may be envisioned. The first type would be capable of calculating all the possible lines of play in any position and would thus be infallible; its theory has not yet been worked out. The other would decide what plays to make after having analyzed each position with the aid of criteria representing the quintessence of principles already known; without pretending to be infallible, these machines—which would not be subject to fatigue—could obtain excellent results against very good players. This is the type to which Strachey's checker-playing machine belongs. While it is inferior to a world champion, it considerably outstrips the average player.

Independently of each other, D. W. Hagerbarger and C. E. Shannon have both built machines capable of playing a game whose content is identical to the game of "Even or Odd" which forms the subject of some penetrating pages by Edgar Allan Poe.

These machines begin by playing at random; they answer a human opponent's "questions" haphazardly, and when it is their turn to ask "questions," they ask them haphazardly, too. But at the same time that they give their random answers, they register the questions and answers of their opponent. When they have accumulated enough of these questions and answers, they analyze the group; they pick out the frequencies and the arrangements which chance could not explain and which obviously define the player's psychology. From this point on, the machine has only to extrapolate the series of preceding questions and deduce therefrom the question to put or the answer to give, with a certain probability of success.

Of course an ingenious player may try to "deceive" the machine by changing tactics from time to time. Since they are based exclusively on the tactics of the preceding plays, the machine's extrapolations will lead it into error. But it will soon take into account this new line of action and deduce therefrom its opponent's aptitude for changing tactics. This aptitude cannot be infinitely free. A moment will come when the machine, basing its

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calculations on a sufficient number of plays, will deduce a deep and unchangeable structure behind them and will certainly win the majority of the games. Already these machines win fifty-five or sixty per cent of the games.

The best tactics for a human player would obviously be to put his psychological tendencies aside and play at random. But such tactics can only be theoretical. It is impossible for an intelligent being, charged with negative entropy, to imitate chance perfectly.

If all the necessary materials were placed within their reach, self-reproducing machines ought to be able to sort the materials and build out of them machines like themselves, which in turn would repeat the same operation until the materials were exhausted. This is a chapter of technology which still belongs, if not to the field of science fiction, at least to that of pure speculation. But can one treat speculations lightly when they originate with a von Neumann, a Shannon or a Wiener?

In 1952 J. von Neumann imagined two different models of such machines. The first has some analogy with the mode of reproduction of crystals and genes; the second has a resemblance to the process of animal reproduction on a large scale. Von Neumann showed that such machines could not be built below a certain degree of complexity, involving a minimum of about ten thousand elements.

There is no doubt that the prospects we have just discussed are rich in promise. But we must not be dazzled by the luxury of this modern Circe or—above all—fall into the temptation of confusing analogies, or sometimes even metaphors, with real identity of form. The attitude taken toward this precaution draws the chief boundary line between positive science and occultism. We should remember in particular, as Professor Fessard cautions us, that "*the constitutive element of the nerve machine, the neuron, has a life of its own which must not be forgotten.*" Let us then avoid the exaggerations of those in whose eyes cybernetics—the "cream puff of contemporary science"—should assume the chief responsibility in the renewal of industry, biology, psychology or sociology, and maybe even of politics! Brilliant as its recent performances are, it is hard to see how they could fulfill such vast ambitions.

On the other hand, we should not go to the other extreme. If we consider only the field of physiology, such work as was done in Canada in 1953 at the symposium on "Cerebral mechanisms and phenomena of the consciousness," held under the auspices of UNESCO and the World

Health Organization, show indisputably the clarifying power of cybernetics when it is handled by real scholars. There is a reasonable course between pretension and denial.

The interest of the theory of communications—and of its interpretation in the theory of strategic games—lies in the fact that it is mathematized, formalized and related to energetics. This is largely due to its having developed out of the work of telephone and radio engineers. For biologists and psychologists it has a solid base, solid but narrow. Their problem is to broaden it without weakening it, to extend it to their own fields without a loss of validity. How far is this possible? Cybernetics is not the philosopher's stone of the alchemists. However, in the labyrinths where so many researchers wander, there are some doors that it would be highly desirable to open and to which the theory of communications and strategic games may furnish the key. The "open sesame" may be found in tomorrow's experiments and research.

REVIEW ARTICLES

René Roux

PURITANISM AND DEMOCRACY

If there are two words hard to reconcile, they would certainly seem to be democracy and puritanism. In all religions, the puritan is one who seeks to separate and distinguish himself from the mass in order to work more effectively for his own personal salvation. The Hippolytus of Greek drama seeks out the forests of Troezen, and the Essene of Israel the grottoes of the Dead Sea. The Pharisee gives thanks that he is not as other men, and Christianity, since its origins, has had its Catharians—the Pure—who have always tended to break with the community of the faithful in order to more surely achieve perfection. All, more or less, according to their own beliefs, paraphrase the esoteric formula which Horace puts into the mouth of the initiate of the Muses—*musarum sacerdos*—*Odi profanum vulgus, et arceo*.

Yet history shows us one form of puritanism for which the *vulgus*—the crowd—was an object neither of hate nor repulsion, and justified neither the word *odi* nor the word *arceo*. Three recent books, which complement one another, open new and little-known perspectives on the economic and political values of puritanism. The most considerable of the three is Ralph Barton Perry's *Puritanism and Democracy*¹ but it cannot be separated from R. H. Tawney's earlier work, *Religion and the Rise of Capitalism*;² and the

1. New York, Vanguard Press, 1944. Pp. xvii+688.

2. New York, Harcourt Brace, 1947.

problems treated by these two are considerably clarified by the portrait of *Cromwell* traced in 1949 by Pierre-Olivier Lapie.³

These three books collectively form an attempt to explain the role played for the past three centuries in the evolution of events on both sides of the Atlantic by a certain conscience labeled "puritan," whose essential preoccupation is with the way the world is going. President Eisenhower's inaugural address of two years ago refers in fact to a basic duty: "In the swift rush of great events, we find ourselves groping to know the full sense and meaning of these times in which we live." Behind such a declaration lie three centuries of unceasing theological efforts to evaluate the proportion of divine will and human freedom in the guidance of events.

If the search for God's designs demands the moral rigors of puritanism, the exercise of human liberties requires the full application of democracy. The developments of the two ideals are inseparable, complex in themselves and in their mutual relations. "Puritan ideals were acquired before and during the colonial period, and democratic ideals before and during the revolutionary period. . . . They originated in the prenatal phase of American life and have predetermined the whole of its later development."⁴

Considered in this way, puritanism is "a system of multiple ideas,"⁵ and its "currents," no less "multiple," are "divergent."⁶ Rich in historical complexes, it is no less fertile in subjective complexes. Puritanism can inspire a whole creed of "idolatrous Americanism,"⁷ to use Professor Perry's phrase. Tawney and Perry agree in criticizing the absolute thesis advanced early in the nineteenth century by Max Weber, who attributed the whole genesis of the "capitalist spirit" to "Protestant ethics" seen from the viewpoint of English puritanism. According to this theory, all of modern economy would be contained in the dogmatics of the Reformation. But, on the other hand, puritanism cannot be reduced to a sterile obsession with prohibitions and rigidities, as in the case of "Santayana's famous book," *The Last Puritan*.⁸

When puritanism officially appeared under that name in 1564, it was a collective term which covered all the opponents of Elizabeth's religious

3. Paris, 1949.

4. R. B. Perry, *op. cit.*, pp. 33-34.

5. *Ibid.*, p. 63.

6. E. Labrousse, preface to the French translation of Tawney's *Religion and the Rise of Capitalism*, p. xiii.

7. Perry, *op. cit.*, p. 52.

8. See Perry, *ibid.*, p. 64.

policy. The date is important: it is that of Calvin's death and of the first applications of the Council of Trent, which had just ended. Now one of the great voices in this council was that of an English cardinal, Reginald Pole, a cousin of the Queen, who died in 1559 while archbishop-primate of Canterbury and left numerous sympathizers in England. The partisans of a complete reform were afraid that the new queen, too, might be led by his anti-Calvinistic teachings to establish an episcopalian, ritualistic and half-Roman religion of a sort secretly admitted by certain theologians of the Council of Trent, such as Cardinal Borromeo.⁹

The new state church, through its very conception, failed to create that atmosphere of spiritual independence which many were demanding for their personal and social life. Elizabeth's parliament sometimes heard extremely daring appeals for liberty. In 1576 one of its members, Peter Wentworth, said that he considered "freedom of speech and conscience" as a "fundamental law" without which neither the ruler nor the state could be "preserved or maintained." Such is the spirit of the "Tudor puritanism" which Americans exalt as "a chapter in the history of idealism,"—a precursor of their own history.¹⁰

But in fact the puritanism of the time of the Tudors was neither purely Christian, nor purely English, nor purely Protestant. Perry does not deny certain pagan origins of puritanism. Christianity was born into a world over which Hellenism had widely spread its philosophy and its rites of purity. "The term *catharos* also has an intellectual sense, that of clearness, sincerity and truth. . . . The wise man is pure because he tries to understand the nature of the world, that of hate and friendship, the principle of things and the secret of our destinies."¹¹ It was tempting for the Christian to utilize this Greek concept of purity for the accomplishment of a faith which promised the sight of God to the pure in heart, and it was under the Greek name of Catharians that the adepts of this Helleno-Christian syncretism propagated their faith in the West and as far as England. A group of Catharians—called Publicans, doubtless because of their "popular" tendencies—left Guyenne (then English) in 1160 to go to Oxford for discussions with an assembly of bishops, and Bossuet later pointed out that "The Protestants consider that these heretics are numbered among their ancestors."¹² For that matter, the word "puritan" is an exact transla-

9. See *Cambridge Modern History*, "The Reformation," p. 592.

10. See M. M. Knappen, *Tudor Puritanism, a Chapter in the History of Idealism* (Chicago, 1939).

11. L. Moulinier, *Le Pur et l'Impur dans la Pensée des Grecs* (Paris, 1953), pp. 169, 175 ff.

12. Bossuet, *Histoire des Variations des Eglises protestantes* (Paris, 1688), Vol. II, p. 190.

tion of the word "Catharian," and the memory of the Greek communities of brothers in purity, the Philadelphi, has remained vivid in America, where its name is perpetuated by the city of Philadelphia.

Furthermore, the puritanism which appeared in England, in a vast flow of tracts, pamphlets and parliamentary speeches against the Acts of Supremacy and Uniformity promulgated by Elizabeth in 1559, was itself far from being purely English in origin and nature. Geneva was a great center of religious inspiration not only for the Scottish Presbyterians, but also for numerous English dissenters. In Calvin's entourage, between 1540 and 1560, refugees from beyond the Channel lived and meditated a potential puritanism in exile. Their mass return, which began in 1560, exactly coincides with the appearance of the puritan movement in England. The correspondence of Theodore de Bèze, Calvin's successor, shows how attentively the second dictator of the Church City followed and guided the anti-Anglican movements in England and the anti-Catholic movements in Scotland. It was Geneva, and not England, which was to give New England that creed of theocratic democracy which deeply and lastingly marked the development of American democracy.¹³

Finally, it is not a paradox to connect the puritanism of the sixteenth century with a general need for spiritual purification which animated the followers of Rome as well as the partisans of Geneva. "There is a curious likeness in essence," notes the *Cambridge Modern History*, "though in forms of expression they are poles asunder, between Puritanism and the movement of which Caraffa and Ignatius are the typical representatives in the Roman church."¹⁴ Puritanism could not escape the immense stir of ideas that constituted European humanism, and if Calvinism made a great impression on it, it also owed much to the Arminian doctrines, which converged with the theology of the Company of Jesus to point to an extension of the role of human freedom in the question of personal salvation.

In 1604 the last of the Tudors was succeeded by the first of the Stuarts. King James, whose mother Mary had been a victim of the puritans of Scotland, outlawed the movement in his Speech from the Throne in the same year. "At my first coming," he said, "although I found but one religion . . . publicly allowed and by the law maintained, yet found I another sort of religion, besides a private sect, lurking within the bowels of this nation. The first is the true religion, which by me is professed and by

13. Various sources cited by Perry, *op. cit.*, pp. 334-49.

14. "The Reformation," p. 688.

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the law established: the second is the falsely called Catholics, but truly Papists: the third, which I call a sect rather than a religion, is the Puritans and the Novelists, who do not so far differ from us in points of religion as in their confused form of policy and parity, being ever discontented with the present government and impatient to suffer any superiority, which maketh their sect unable to be suffered in any well-governed commonwealth."¹⁵

From that time on, the destiny of the dissenters was to swarm out of England. But this movement itself was complex, like their whole nature. They felt two simultaneous attractions, which must never be dissociated: Holland and America—America to create something new, and Holland to learn something new.

Since 1580 Holland had become the country of refuge and tolerance. As early as 1600 English refugees founded in Amsterdam a chapel which was to become the cradle of the Baptist Church. Expelled by the Bishop of London, William Ames published in Holland his *De Conscientia*, which became a classic for the puritan conscience. At a time when the Church of England was trying to stamp out the practice of money-lending at interest as diligently as it was trying to stamp out witchcraft,¹⁶ the immigrants came to know a country which had its banks and its colonies, and universities which were not afraid of the shock of conflicting ideas.

It was just this conflict of doctrines which led to a venture thus far unknown in the Protestant world of state churches and church-cities: an international synod which brought together in Dordrecht the reformers of England, Scotland, the Palatinate, Hesse, Switzerland, Geneva and Bremen to discuss two opposing doctrines; Calvinism, represented by the theologians of Groningen, known as Gomarists, and Arminianism, a liberal interpretation of man's autonomy which was hostile to the predestinationism of Geneva. Its author, Jacobus Arminius, who had long been a professor at the University of Leyden, had died in 1609, but he had numerous disciples whose ideas could not be displeasing to those who had exiled themselves for the sake of liberty. The Synod of Dordrecht, part of the background of the birth of North America, had a considerable influence on the evolution of American ideas. The synod sought to define the universal significance of the problems at stake; it talked, for the first time in the Protestant world, of an ecumenical council—specifically, of a council "to which all those who might feel themselves wronged by this synod might

15. Quoted by Perry, *op. cit.*, p. 69.

16. Tawney, *op. cit.*, chap. iv, "The Church of England."

appeal."¹⁷ It was the Arminians who suffered from being "wronged," since the Calvinists had questioned their motives, accusing them of "making the choice of God depend on the will of men, of bringing back paganism and disguising Papism."

Without waiting for the ecumenical council, many Arminians and Arminian sympathizers, Dutch or refugees, preferred to take to the sea. Since the preceding year (1618), on the island of Manhattan, a New Amsterdam had been awaiting an influx of colonists. The Synod of Dordrecht sent it many members—and just at the date (1619) when the English colony of Virginia was founding a parliament. When the famous pilgrims of the *Mayflower* landed in the New World the following year, these victims of the growing absolutism of English royalty found a parliament already established in that distant land. "This transplantation of parliamentary institutions to a colony," says Jacques Pirenne¹⁸ "marks one of the most important dates in the history of the world."

The date is important, certainly, but for the sake of contrast it should be confronted with the adventure of the pilgrims of 1620. The latter, members of the poor parish of Scrooby, which had been separated from the Established Church since 1607—their pastor, John Robinson, led his flock—tried Holland before they tried America. It is probable that they no longer found in Holland the tolerance they had counted on, but it is equally probable that in America the ardor of their faith was hardly better understood by the parliamentarians of Virginia. And it is just at this point that one may distinguish the forging of the new bonds between puritans and capitalists which gives the key to the rise of America.

The Virginians were rich, Anglican and conformist. "The form of Virginia society was due to the cult of tobacco rather than to a cult of piety."¹⁹ The pilgrims of Plymouth were socially and spiritually unassimilable to the Virginian conception of the affairs of this world. How were these two contradictory colonizing forces able to become complementary?

There was the common assimilation of new land and new blood by the absorption of the Dutch colonies (New Amsterdam) and even the Swedish ones (Christina), which were surrounded by the English domain and

17. Bossuet, *op. cit.*, Vol. II, p. 459, and all of Book XIV.

18. *Les grands Courants de l'Histoire universelle* (Paris, 1943), Vol. III, p. 547.

19. Perry, *op. cit.*, p. 73.

soon annexed by it. But there was above all—ten years after the arrival of the *Mayflower* pilgrims—the great landing of the colonists of 1630, which followed two events of prime importance: the dissolution of Parliament by King Charles and the foundation of the privileged Massachusetts Bay Company (1629).

Thus the religious faith of the colonists was an undeniable motive for their departure. The religious freedom of dissenters, which had been precarious since 1604, was now directly threatened. What is more, religious faith was associated with a sentiment which was to reappear in American history, a mistrust of Europe. The Old Continent was in the throes of a devastating war which was to last eighteen years more and might have led to the worst—the crushing of Protestantism, even in England and France, by intolerant Catholic powers.

But at the same time the powers of the soul and the heart were helped by the powers of money and production. The Church of England had gradually become Arminian or Latitudinarian toward the problems of capital and investment. The Anglican hierarchy had never admitted the dogmatic conclusions of the Synod of Dordrecht. This was even a cause of the opposition shown to Anglicanism since 1620 by the dissenters who had united under the Edinburgh Covenant, which is the origin of the whole Cromwellian revolution. Nevertheless, these rigorists were to benefit from the canonical tolerance which came more and more to affect practical and everyday life. It was to the Crown's interest to encourage emigration on the part of these ill-balanced Christians, who, though they were bad Englishmen inside the country, might be very good Englishmen outside. Nor were Catholics excluded from the privileges granted colonists; one of their chiefs, Lord Baltimore, gave them lands in Maryland.

Thus a basis for agreement was found. "Liberty was installed by the English colonists of North America under the aegis of the capitalism of the great stock companies."²⁰ Soon an immense literature developed which permitted purity of the soul to be reconciled with business efficiency. The *De Conscientia* of the puritan William Ames developed into Richard Baxter's *Summ of Practical Theology and Cases of Conscience*. As Tawney notes, the book is in essence a puritan *summa theologica* and *summa moralis*, true to medieval models in dialectic method, but its author is well aware that business everywhere depends on credit, and he does not neglect to show the moral qualities which the practice of commerce permits to develop.

20. Pirenne, *op. cit.*, Vol. III, p. 604.

It was in this atmosphere of material and moral security that the colonists, from 1630 onward, began to form little parliamentary republics which compensated, if one may put it this way, for the decline of parliamentary life in Europe. "Each of these little states, created in the wilderness, organized itself around parliaments where elected notables sat. . . . Over this development presided the double tendency of the population, at once businesslike and pietistic."²¹ In 1636 a Boston pastor, John Harvard, founded the college which was to glorify his name and develop into a new Cambridge. In the face of the decadence of the institutions of old England, the colonists worked on a plan for a union of New England under the form of a federal democracy. The treaty which in 1643 federated Connecticut, New Haven and Rhode Island clearly indicates in its preamble the link which it is desired to establish between a certain civic spirit and a certain community of faith:²²

"Whereas we all came into these parts of America with one and the same end and aim, namely, to advance the kingdom of our Lord Jesus Christ, and to enjoy the liberties of the gospel in purity with peace." It was in these terms that the three colonies in which puritan thought had evolved the furthest justified their union in the New England Confederation, which prefigured the national development of what was to become the United States.

By then puritanism had reappeared in England, this time in arms, with Roundheads who poked fun at the wigs and curls of the king's conformists. As the tempest rose in fury (to borrow Tawney's image), the forest bent and the oaks broke off.²³ One of the oaks that fell that year was Archbishop Laud, Anglican Primate of Canterbury, so hostile to Calvinism that in Rome there had been talk of making him a cardinal. He was condemned to torture, and the power went to his greatest adversary and opposite, Cromwell, the typical puritan, "the most certain example of that transposition of the metaphysical into the human which provides the strongest motivation of the political man . . . showing that politics has no grandeur unless it is dominated by metaphysics."²⁴

21. *Ibid.*, Vol. III, p. 270.

22. Perry, *op. cit.*, p. 334. Academic training and political education are connected. In 1650 a charter was granted to Harvard, second university to be founded in North America (the first having been the University of Mexico, a Spanish and Catholic institution which dates from 1550). An offspring of Cambridge, Harvard was likewise puritan and platonistic. Cromwell studied at Cambridge.

23. Tawney, *op. cit.*, chap. iv, "The Puritan Movement."

24. Lapie, *op. cit.*, p. 267.

Everything was new in the circumstances which in 1649 led the king to the scaffold in Whitehall. What was particularly new was the influence already gained by young English America over her mother country. "The example of democratic and pious institutions had an influence on the development of English political thought in the time of the Protectorate."²⁵ In addition, the disappearance of ecclesiastical jurisdictions after the abolition of the episcopal hierarchy put an end to the last hindrances to the freedom of capital to fructify. The puritans confided these investments to Providence: they colonized America with the Providence Company and all the rich emigration companies whose management they assumed. A remarkable liaison agent between the English republics of America and the new republic in England, their younger sibling, appeared in the person of Roger Williams, who had given the symbolic name of Providence to his foundation in Rhode Island. In the seafaring life, which was coming more and more to represent the atmosphere of liaison between the two Englands, Williams sought striking comparisons to inculcate in the minds of people on both sides of the ocean the fundamental idea of tolerance in public affairs. "The state is a ship whose passengers should be allowed to believe what they like so long as they obey certain rules on which the safety of the ship depends. There is no justification for persecuting Jonah or throwing him overboard so long as he does not annoy his fellow passengers or interfere with navigation."²⁶ Such pithy sayings were effective and remind one of the wit of Franklin.

Williams got his allegories from seamanship. His contemporary, James Harrington, a great European voyager, sought his inspiration in a grandiose alliance between the ocean and the republic and in 1656 published his *Commonwealth of Oceana*, a political novel dedicated to Cromwell and rich in democratic ideas—such as the secret ballot and compulsory schooling—which passed into American life.²⁷ The ocean had become the sea of liberty since the Act of May 19, 1649, by which Parliament declared that "England and all its possessions and territories" would thenceforth constitute a "Commonwealth or Free State."

This expression of the possibility of extending the notion of a republic

25. *Ibid.*, p. 15.

26. Perry, *op. cit.* p. 350. A Lutheran contemporary of Williams, Calixtus of Helmstaedt, saw all Christians, including the Catholics, in the same "communion of the Universal Church."

27. *Ibid.*, p. 185. The strong influence of this work on New England institutions is shown in an article by Raymond Polin, "Economique et Politique au XVII^e siècle: l'Océana de J. Harrington," in the *Revue française des Sciences politiques* for January-March, 1952. Harrington proposed a senate with broad powers as a guarantee of the republican integrity of his commonwealth.

to large territories was to make a great impression on the little states of New England. For there was no longer in old England an established religion, either in the Anglican or in the Presbyterian form, since Cromwell was hostile to both, but a puritan secularity, of a universally "ecumenical" character, as the pastors of Dordrecht would have said, based on the puritan ideal of service. And this puritanism, embracing all ecclesiastical organizations, could create a political link between Virginia and Scotland.

Now this ideal was presented to little republics which Jacques Pirenne compares rather closely to the Greek colonial cities of the seventh to fifth centuries B.C.²⁸ They were Pythagorean cities, more theocratic than democratic, governed by notables who not only formed an elite on the political plane but were also the elect on the mystical plane. The American republics appeared to be a mixture of a city of the type of Geneva—though they were more Arminian than the Five Articles of Faith adopted by the Calvinist majority at Dordrecht—and the platonic city as it was seen by the masters at Harvard. For the rest—and this increased their resemblance to the antique world—these republics had their slaves: Negroes, sometimes Irish. And they believed themselves "holy communities"²⁹ of the type idealized by the Presbyterian Richard Baxter in his *Holy Commonwealth*, published in 1659.

Cromwell broke this oligarchic Greco-Christian mold in which the American colonial spirit was in danger of becoming hardened. Certainly the Americans kept the cult of the citizen of the antique city-state. They dedicated one of their principal towns to Cincinnatus. In Washington's entourage there was much talk of Pericles, Aristides, Brutus and Cato. But Cromwell was above all an independent, an empiricist. He let an immense revolutionary literature grow up: "The role of the press was considerable, in the form of newspapers or pamphlets. The most talented man to use this new weapon was John Milton. . . . In the eyes of his contemporaries, for the thirty years between 1641 and 1671, Milton was much more a puritan political writer than a lyric philosopher."³⁰ This mass of puritan political writers finally eliminated extremist doctrines—to which the Protector himself, incidentally, was resolutely opposed.³¹

R. H. Tawney compares this mixture of writings to a melting pot, full of ingredients which reacted subtly on one another. Puritanism, he points out, continued to fashion the social order, but was more and more fashioned by it as time went on. The Americans were able to keep abreast

28. Pirenne, *op. cit.*, Vol. II, p. 548.

30. Lapie, *op. cit.*, p. 189.

29. Perry, *op. cit.*, p. 115.

31. *Ibid.*, p. 188.

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of all the spiritual experiences of that strange organism constituted by Cromwell's army. In 1647 the latter published "the Agreement of the People for a firm and present Peace, upon grounds of commonright and freedom." Its authors, the agents of the five regiments of horse, signed "a striking anticipation of the American and French Declarations of the late eighteenth century, embracing: the fundamental law of nature; the institution of the powers of government by voluntary compact among all the people; government subject to the consent of the governed; the reservation of individual liberties, and their protection against the usurpation of government."³²

"All shades of puritan opinion" were represented in this army, whose "Debates" reflect the different political motives of their puritanism.³³ America, where many of Cromwell's "horsemen" went to retire, could reconstruct from these "Debates" all the wealth of a religious inspiration which was never again to dissociate itself from its political and moral structure.

Moreover, in spite of the transcendence of some of his illusions, a sociologist like Baxter clearly showed to what extent puritanism was the doctrine of the middle classes, commercial or liberal, and favorable to the social equilibrium. The revocation of the Edict of Nantes in 1685 was time after time exploited by the puritan publicists to demonstrate that persecution is incompatible with prosperity because it oppresses and drives out the most industrious workers. And it is in this sense that, according to Tawney, puritanism was the teacher of the English middle classes.

In America puritanism was the educator of the same classes, and its action went even deeper, for the environment of the New World suggested to the Christian colonist the temptation to a Biblical conformism which might easily become pernicious. The natives were too easily assimilable to the Canaanite tribes, condemned by the Eternal throughout eternity. The doctrine of puritanism counselled the colonists to spiritualize the human penetration of the forces of nature and to head off a return to the recourse to natural law. It saw the Creation in Nature and agreed with Blackstone that "The will of [man's] maker is called the law of nature."³⁴

After 1660, the Biblical period ended. The Americans "passed from a 'Bible Commonwealth' into a modern capitalist society."³⁵ Puritanism

32. Perry, *op. cit.*, pp. 339-40.

33. *Ibid.*, p. 344. These debates were recently published by Professor A. S. P. Woodhouse.

34. Quoted by Perry, *ibid.*, p. 182.

35. Perry, *ibid.*, p. 317.

served as a mediator in these difficult problems of social evolution. Through it, as Tawney says, the ideas of economic progress found new support in the notion of capital and labor combining in the service of God. Thus puritanism contributed greatly to prepare the way for the commercial civilization which triumphed with the revolution of 1688—a civilization which, in America and England as elsewhere, demanded a conciliation of the views of God with technical and practical considerations and which, to do this, had recourse to “practical divinity.”³⁶

The history of the influence of puritanism on American political customs may be ended here. A religious potential of virtues which reinforce one another—virtues of productivity, liberty, equality—puritanism became the inner agent through which political potentialities flowered in constitutional and governmental realities, no longer exposed to the risk of opposition from other rival movements. The last pages of Lapie’s *Cromwell* forcefully sum up “the inextricable mixture” of religious and political elements which guided Cromwell’s regime and survived it. “If Louis XVI died because he was king, Charles I died also, and perhaps primarily, because he was pope. The two questions, the political and the religious, are mixed in the English revolution. . . . The personal, interior, intimate God of the independents was the one to whom Cromwell listened. . . . If the word politics is taken in its most general sense, if one looks at the Cromwellian hero as a sort of creator, then politics was inspired by divinity. The example of Oliver Cromwell fighting, conquering, legislating under the inspiration of his God is certainly the most notable example of this transposition of the metaphysical into the human which provides the strongest motivation of the political man. England, kneaded by Cromwell’s square thumb, invoked God as its destiny was molded.”³⁷

America had no less plasticity. The independent of Cromwell’s type passed irresistibly from the notion of the independence of the soul to that of the independence of the state. The burgeoning of sects which so complicated the religious map of America in the second half of the 17th century only gave puritanism an equalizing character as a stabilizer, a Leveler—to borrow the term applied to themselves by one of the groups in the vanguard of Cromwell’s party.³⁸ Thus the “after-clap of puritanism” could be

36. *Ibid.*, p. 301. In 1673 Richard Baxter published his *Christian Directory, or a Body of Practical Divinity, and Cases of Conscience*. In Europe, Pascal had just attacked Jesuit casuistry in his *Lettres Provinciales*.

37. Lapie, *op. cit.*, pp. 266–67.

38. *Ibid.*, pp. 195–204, “Les Niveleurs.”

recognized in sects which for us appear as singular as the Millenarists, the Campbellites, the Nazarites, the Adventists, the Shakers, the Quakers, and even the Mormons.³⁹ In fact puritanism, through the complex origins already noted, was not out of place either in societies which were more Biblical than evangelical, nor in groups which were more deistic than Christian. Seeking to serve as a sort of common denominator of so many sects, puritanism prevented them from becoming esoteric—or even occult—to make of them, each in its way, schools of democracy.

From the end of the 17th century, puritanism religious and political position took on a real value in Christianity. Yet it was ignored in Europe. Nothing is so striking in this connection as the juxtaposition of two dates: 1688 and 1693. The first is that of the publication of Bossuet's *Histoire des Variations des Eglises protestantes*. It has considerable documentation, but there is not a word in it about America. Certain phrases sound like puritan sayings: "One scarcely knows in what country one is in, nor whether the people are Christians, when one sees the basis of religion handed over to the temporal authority and the Princes become its arbiters."⁴⁰ The Bishop of Meaux did not suspect that a whole people on the other side of the Atlantic was learning to pray and to think in order to find an answer to the same question that caused him such anxiety.

It was in 1693 that a New England puritan brought the answer. He was William Penn, founder and lawgiver of Pennsylvania, who had studied at the French Protestant academy of Saumur, and whom Bossuet might have met—for Penn mixed with the pro-Catholic entourage of James II as well as with the Quakers. In 1693 he boldly published the first American plan for a democratic peace in Europe, an *Essay towards the Present and Future Peace of Europe*, in which he recommended the establishment of a European parliament and a European state.⁴¹

Penn was ambitious. With the parliamentary life which England had just adopted more firmly than ever, he did not hesitate to associate powers as distant in spirit from Britain as Spain, Russia and Turkey. He believed in a European deliberative assembly where Christians and deists might be associated, as were Episcopalians and Presbyterians, Trinitarians and Unitarians in America. He wanted to put the fate of Europe into the hands of Christian charity, freely consulted, placing this above all temporal authorities.

Thus, while one of the greatest students of European religious crises was

39. Perry, *op. cit.*, p. 79.

40. Bossuet, *op. cit.*, Vol. II, p. 671.

41. See Lazlo Ledermann, *Les Précurseurs de l'Organisation internationale* (Neuchâtel, 1945).

forgetting puritan America, the latter was affirming its solidarity with Europe. At the end of the eighteenth century, when the Abbé Raynal used the theory of natural environment to charge Americans with degenerating in isolation,⁴² the Philadelphia Society protested violently, explaining that the mind, as master over nature, would be able to remake the country to suit the needs of Americans, thus accomplishing not only a useful work but a pious one, since it would "bring them nearer to the Creator."⁴³

What is striking in Professor Perry's broad inquiry into puritanism is that America became the country of revenge for the Arminianism that had been defeated at Dordrecht. In spite of a massive influx of French Calvinists after 1685, the American colonists opposed the theology of liberty to the diverse theories of predestinationism—including the one which Raynal had derived from the sociology of environment—and did so in the same manner as Catholic Europe utilized Molinism against Jansenism.

And there, it seems, is the secret of the harmony of the two apparently contradictory forces born of American puritanism: collective action and individual action. "The puritan creed has repeatedly served as the basis of concerted action."⁴⁴ The present development of this creed, "turning more and more toward accomplishments of the collective type," seems to worry the latest great observer of Americans, André Siegfried, in his recent *Tableau des Etats-Unis*.⁴⁵ Will not the individual run the risk of being reduced to impotence? The answer is in this tireless search for inner freedom which, from the time of Cromwell's independent puritans and the Arminian puritans of the 18th century, has never lost its concern for defining man's liberties before socializing him, and for making him more deeply conscious of what these liberties mean.

42. Raynal, *Histoire philosophique*, Vol. XVIII, chap. xxxii (Neuchâtel edition of 1783). The author notes that the inhabitants of English America were considered less hard-working than their ancestors and less gifted for the arts. But he does not take the responsibility for this "prejudice," which he judges "dissipated" by the new era of liberty.

43. Cited by J. Gottmann, *La Politique des Etats et leur Géographie* (Paris, 1952), p. 35.

44. Perry, *op. cit.*, p. 34.

45. Paris, 1954.

MYTHOLOGY AND THE
HISTORY OF RELIGIONS

Mitie e Leggende

BY RAFFAELE PETTAZZONI

Vol. I, *Africa-Australia*; Vol. III, *America Settentrionale*.

Turin: Unione Tipografica Editrice Torinese, 1948, 1953. Pp. xxvii + 480; xviii + 576.

*La Religion dans la Grèce antique, des Origine à
Alexandre le Grand*

BY RAFFAELE PETTAZZONI

Translated by Jean Gouillard. Paris: Payot, 1953. Pp. 268. (Original edition: *La religione nella Grecia antica fino ad Alessandro*. Bologna, Zanichelli, 1921. Pp. xii + 416.)

La Religion populaire dans la Grèce antique

BY MARTIN P. NILSSON

Translated by Frans Durif. Paris: Plon, 1954. Pp. 245. (Original edition: *Greek Popular Religion*. New York: Columbia University Press, 1940. Pp. xvii + 166.)

Genèse de l'Odyssée. Le Fantastique et le Sacré

BY GABRIEL GERMAIN

Paris: Presses Universitaires de France, 1954. Pp. 700.

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Professor Raffaele Pettazzoni is one of the most illustrious historians of religion of our time. He belongs to a type of scholar which is unfortunately becoming rare and is perhaps headed for extinction: those who have taken as their specialty the universal history of religion. At first sight such an ambition might seem to pose an impossible task; the historico-cultural field has become so wide that no single mind could pretend to assimilate and master a quantity of documents that is increasing every day. Let us therefore avoid misunderstanding on this point: there is no question of the historian of religions attempting to replace the Americanist, the Sinologist, the Africanist, or to master their knowledge of philology in order to study and interpret the Chinese, Aztec and Bantu religions: it suffices for him to record the results of research carried out by the specialists and to classify and evaluate these results in a perspective which is exclusively his own: that of the general history of religion.

Unfortunately, this is a program which is rarely realized. If he specializes in one single broad sector, the ancient Near East, China, or Greece, for instance, the historian of religion no longer has the time nor the energy to follow and integrate the results obtained by his colleagues in other fields. Instead of studying problems as they emerge from all these special realms of research, the historian of religion usually adopts one of the currently fashionable hypotheses and orients his own studies with relation to it. For a whole generation, historians of religion sought—and found—“agricultural demons” almost everywhere; for another generation they applied themselves to seeking out the *mana* in innumerable religious structures. It is significant that the most striking hypotheses proposed within the past seventy-five years to explain the essence and the origin of religion have been the work of eminent scholars whose specialty was not the history of religion. It was Max Müller, an Indianist of genius, who founded naturistic mythology, and for twenty-five years the historians of religion taught that the Indo-European gods and their mythologies were nothing more than meteorological epiphanies. E. B. Tylor, an anthropologist, identified animism as the first form of religion; Sir James Frazer, an ethnologist as well as a classicist and folklorist, started two great fashions in the history of religions: the agricultural demons (borrowed, incidentally, from Mannhardt) and totemism. Finally, the most recent hypotheses on the origin and the first form of religion—the *mana* and pre-animism, mystic participation and the pre-logical mentality, the Oedipus complex or the archetypes of the collective unconscious—were proposed by sociologists, philosophers, and psychologists. Even the most important reaction against

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such abusive hypotheses—we are thinking especially of religious phenomenon—was only the application of a well-known philosophic method.

This situation need not, however, be emphasized here. It should be recalled, nevertheless, that for many reasons the history of religion, as an autonomous field, has yet to find its methodology, while ethnology, sociology, and folklore already have theirs. Historians of religions are dependent, for the most part, on the methodological progress made in some neighboring field, especially in ethnology. One even suspects a tacit tendency to leave it to the ethnologists and the sociologists to construct a universal history of religions, which is understandable to a degree but not devoid of risk.

It is difficult, for example, to imagine a history of initiation, of secret societies and mysteries, or a history of Gnosis, constructed with the means used by ethnology or sociology or in their perspective. For, while tribal initiations and secret societies are well known to the ethnologist, these religious phenomena are prolonged and considerably amplified in the great historical religions; and alongside the Australian puberty rites or the Melanesian *men's societies*, there are Eleusis, the Greco-Oriental mysteries, the Indo-European or Japanese *Männerbünde*, Gnosticism, Hermetism and Tantrism, and so on. Often the study of these evolved forms gives a better understanding of the structure, the intention and the essence of an elementary initiation rite. This task of integration can only be the work of a historian of religion; he alone is able to bring together the results obtained by ethnology and Orientalism, by classicists and folklorists. (In the case of the men's societies, for example, folklore contributes materials of unequalled value.)

For the past half-century ethnology has tended more and more to become a historic discipline. This orientation has already been most useful to the history of religions. Distinction is rarely made between the primitives—the *Naturvölker* without a history—on the one hand, and the historical religions, beginning with that of ancient Egypt and ending with Islam, on the other. Whether or not they accept the theory of cultural cycles worked out by Graebner and Schmidt, ethnologists agree that every primitive people has a history and that this history is sometimes very complex. Hence the historian of religion no longer faces two radically separate universes: the historyless universe of the primitives and the historic universe of the great cultures; whatever be the form of religion under study, there is always a fragment of universal history involved. The progress of ethnology

has abolished the solution which depends on a continuity between the primitive world and ours: both are historical worlds.

But even after he has assimilated and evaluated this discovery of the ethnologists, the historian of religions has not yet solved his own problem. His task is not over when he realizes that every religious form has a history and that it is an integral part of a well-defined cultural complex; he must still understand and clarify the meaning, the intention, and the message of his religious form. To go back to the example used above, even if one has reconstituted the history of initiations from the Australians to the Greco-Oriental mysteries or Tantrism, and has clarified their social and cultural implications, their spread, their transformations and degraded forms, one has not yet elucidated the deep sense of these ceremonies. A spiritual attitude of man is inherent in all these initiation rites. No one is better prepared to grasp, interpret and present it than the historian of religions, for no one else has the materials and perspective which he commands. In other words, the historian of religion is obliged by his own scientific discipline to deal with the timeless constants of religious experience and the structures which result from it, and which cannot be reduced to historic terms. He must decide whether the history of religion will keep its autonomy, or end by being integrated into ethnology or sociology, abandoning to the psychologists and philosophers, as a monopoly, the study of the structures and constants of religious life.

This long parenthesis has not led us so far from our subject as it might seem. The work of Professor Pettazzoni provides an excellent illustration of what the autonomy of the history of religion means. We said earlier that he had made the study of all religions his specialty. Indeed, after having begun as an archaeologist and a classicist, he has never ceased to broaden his field of research. Though his first vocation led to the writing of some excellent books (*La Religione primitiva in Sardegna*, Plaisance, 1912; *La Religione nella Grecia antica*, Bologna, 1921; *I Misteri*, Bologna, 1924), the greater part of his work is that of a non-specialist, that is to say, of a historian of religion who uses and integrates the results obtained by specialists in other fields. Although he is not an Iranologist, his *Religione di Zarathustra nella Storia religiosa dell'Iran* (Bologna, 1920) remained for a long time one of the best general works on Iranian religions. Assimilating the enormous mass of ethnological literature, Professor Pettazzoni published in 1922 the first volume of his *Dio. Formazione e Sviluppo del Mono-teismo nella Storia delle religioni* (*L'Essere celeste nelle Credenze dei Popoli primitivi*), in 1930 the *Confessione dei Peccati* (this first volume was largely

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devoted to the primitives), and in 1948 the first volume of his *Mitti e Leggende* (Africa-Australia). Two other volumes of the great monograph on the confession of sins continue the survey to Oriental and Mediterranean religions; a *Mitologia giapponese secondo il Kojiki* appeared in 1929; finally, he has collected certain more specialized studies in two recent volumes (*Saggi di Storia delle Religioni e di Mitologia*, Rome, 1946; *Essays on the History of Religion*, Leyden, 1954) and has published in *Italia religiosa* (Bari, 1952) some synthetic studies on the Italian and Roman religions. He also founded, and has directed for thirty years, the review entitled *Studi e Materiali di Storia delle Religioni*, which in 1929 inaugurated a popular collection of texts on archaic religions, *Testi e Documenti per la Storia delle Religioni*, and has recently become director of the *Classici della Religione* series published by Sansoni of Florence. (The first volume contains a complete Italian translation of the *Edda*, by C. A. Mastrelli. The *Avesta*, the Taoist texts, and the Koran are in preparation.)

Professor Pettazzoni has carried on his scientific work side by side with his activity as an organizer and promoter of studies on the history of religions; it is chiefly due to his efforts that there is such a lively interest in the history of religions in Italy today. As for his theoretical position, it is, first of all, that of a historian who has deeply considered, and partially adopted, Croce's interpretation of history. In an article which recently appeared in *Numen* (Vol. I, Part 1, January, 1954), he wrote that "the only way to escape the dangers" of a phenomenological interpretation of religion "consists of constantly referring to history." We shall not discuss here the tension between what the Italian scholar includes under the name of phenomenology, and history. Professor Pettazzoni's work seems to us more instructive than his theoretical position, and it proposes a sort of exemplary goal to every historian of religion who is conscious of the dangers which threaten his science (the dangers of specialization, first of all).

He addresses himself to the broad cultivated public in the magnificent series of *Myths and Legends* of which the first volume has just appeared. The texts were chosen and translated according to the best ethnological sources, and most of them are annotated, though always with care not to detract from the reader's pleasure. For the author never for an instant loses sight of the general intention of his work: to obtain the largest possible audience for the productions of this oral sacred literature of the primitives. Each ethnic group is presented in a short introduction, which constitutes almost a résumé of the present state of knowledge on the questions involved, and is completed by an essential bibliography. In the case of

Africa (Vol. I) the groups presented go from the Boshimans to the Berbers and Pygmies and include the Hottentots, the Damas, the various Bantu groups, etc. In the case of North America the groups include the Eskimos, the Californians and the Pueblos, Pimas and Papagos. The first volume also includes a selection of Australian myths and legends (pp. 460-480). We reviewed this first volume in an article in *Critique* (April, 1948, pp. 708-717).

As Professor Pettazzoni remarks (Vol. I, p. x), a myth is always a true story because it is a sacred story. The account of the origin of the world, of the origin of the clan or of certain traditional customs is a true story, because it treats of essential realities—that is to say, of sacred realities. It is for this reason that among many primitives the myths may not be indiscriminately recited anywhere and any time—as is true of tales and jokes, which are *false stories*—but only during the night or during the seasons which are ritually richer (autumn and winter), or during the interval between religious ceremonies, etc. (*ibid.*, pp. viii-x), in other words, within a sacred lapse of time. To tell a myth is to proclaim what happened *in illo tempore*. "That is the way it was because it is said that that is the way it was," say the Netsilik Eskimos to justify the validity of their sacred history and their religious traditions. The myth proclaims the appearance of a new cosmic situation or an event of primordial importance. Thus, through the simple fact of its manifestation, this situation or this event becomes a paradigm for the whole course of time.

One might prolong Professor Pettazzoni's observations on the equation: myth = true story because it is a sacred story. Because of the very fact that the mythical event happened *in illo tempore*, under the effect of the creative virtue of the gods (or civilizing heroes, or ancestors, etc.), it is not only real, it is also exemplary with respect to all human action. "We must do what the gods did in the beginning," says an Indian text (*catapata Brâhmana*, VII, 2, I, 4). "Thus the gods did, thus do men" (*Taittiriya Brâhmana*, I, 5, 9, 4). The principal function of the myth is thus to determine the exemplary models of all the rites and of all significant human activities (eating, procreation, work, etc.). It follows that the repetition of all these archetypes constitutes an abolition of profane time and the establishment of mythical, sacred time. (For the consequences which follow from the periodic abolition of profane time, see this writer's *Mythe de l'éternel Retour*, Gallimard, 1949.)

African mythology—except for that of the northwest regions—is not particularly rich. Certain scholars are even inclined to doubt the mytho-

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poetic faculty of the African peoples: the absence of real cosmogonic myths is interpreted by Hermann Baumann as a rather important proof of the mythological poverty—if not sterility—of the Africans. But these are hasty conclusions, and Paul Radin recently had occasion to refute them (*African Folktales and Sculpture*, New York, Bollingen Foundation, 1952). What may be said is that the central interest of African mythologies is focussed on the first inhabitants of the world and their relations with the supreme beings and other divinities. This mythology is consequently anthropocentric rather than cosmocentric or theophanic. As Paul Radin says, "rarely has man been depicted as more completely and inextricably anchored in this world, more obsessingly earthbound" (*op. cit.*, p. 4).

North American mythologies, on the other hand, are dominated by cosmogonic and anthropogonic motifs, that is to say, by myths of origin. Professor Pettazzoni justifiably gives them the place of honor in his collection. It includes fine myths of the creation by supreme beings (sometimes a creation *ex nihilo*, through the force of concentration alone, in the manner of the *shamans*), the cultural adventures of the Demigod, and endless stories of the Coyote. Of exceptional interest are the Pueblo myths of the creation of men in the depths of the Earth Mother and their emergence into the light (pp. 533 ff.). These myths are all the more important for the historian of religions because their function as an exemplary model has been rather well kept: among the Navajos, for instance, the myth of the emergence is generally told on the occasion of certain ceremonies held to cure a sick person or initiate a new *shaman*, that is, when something must be *remade* (the health, the life force of a sick person), or made, created (like the new spiritual situation represented by the initiation of the *shaman* [cf. Mary C. Wheelwright, *Navajo Creation Myth*, Santa Fe, New Mexico, 1942, pp. 19 ff.]).

The Earth Mother plays an important role in Signor Pettazzoni's conception of Greek religious history. It should be said immediately that *La Religion dans la Grèce antique*, of which we now have an excellent translation by Jean Gouillard, dates from 1921: the text has been only slightly revised, the footnotes have been abbreviated and the author has added a new introduction and up-to-date bibliographies. The introduction is particularly important: it sets forth very clearly Professor Pettazzoni's present point of view on Greek religious history and the history of religions in general. "Greek civilization," he writes, "did not emerge from a void. There does not exist a timeless Greek spirit that revealed itself in historical times. Within the framework of history, every *phainamenon* is a *genomenon*."

The Greek civilization—that is, the Greek spirit in its objective reality—came from the meeting of two pre-existing civilizations: one, the *Mediterranean*, present *in situ*, and the other, the *Indo-European*, which was added” (pp. 18-19). The Mediterranean civilization is known through its monuments, especially those of Minoan Crete; the Indo-European civilization, on the other hand, can be reconstituted only through hypotheses drawn from its linguistics. “Hence a double current among scientists: some, especially the archaeologists, tend to exaggerate the role of the Mediterranean factor in the elaboration of Greek civilization; others, the linguists, are inclined to give the advantage to the Indo-European factor. Both tendencies have the same fault, an exclusivism which is inadmissible in the eyes of history. From the point of view of historical realities, the basic fact is the essentially different character of the two civilizations. On the whole, the Indo-Europeans represent a patriarchal pastoral society, the Mediterraneans, a matriarchal agricultural civilization” (pp. 19-20).

Similar encounters between a civilization of the patriarchal and pastoral type and a matriarchal and agricultural civilization have also been noted elsewhere: in Egypt, in Mesopotamia, in India, in China, in pre-Columbian America (p. 21). As the author takes the precaution to remind us, “there is no question of explaining the Greeks through the Aztecs”; the aim is simply to understand the originality of Greek civilization in the ensemble of universal history “instead of trying to detach it, solitary, in an inaccessible zenith” (p. 21). Now as religion is also an aspect of Greek civilization, the initial dualism of this civilization “is likewise shown in religion” (p. 22). Zeus and the majority of the Olympian pantheon belong to the patriarchal civilization of the Indo-European invaders; Demeter (the Earth Mother) and Dionysos with all his companions—Maenads, Satyrs, Silenes—represent the aboriginal matriarchal Mediterranean religiosity; they were not admitted to the Olympian pantheon until rather late.

This concept of Greek civilization and religion seems to us correct and, above all, useful; it has the great virtue of both outlining the structures of the Greek religion and retracing their history (or, more exactly, their pre-history). As Signor Pettazzoni clearly shows, a similar religious and cultural polarity can be verified elsewhere: Hinduism, for example, represents a synthesis between the aboriginal, pre-Aryan traditions and the tradition brought by the Indo-Europeans. Obviously “this schema, like all schemas, is conventional, and its terminology too” (p. 20). Indeed, it must not be forgotten that the tension between two traditions—a tension followed by reconciliation—has already been noted among the Indo-

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Europeans; Georges Dumézil has shown that in the social and religious tripartition of the Indo-Europeans the third class was represented chiefly by the farmers, that is, by ethnic elements who had been reduced to submission and integrated into a later synthesis.

However, one final remark in the introduction might give rise to misunderstandings: "It is not enough to learn these new hypotheses; we must understand them, and understand them historically. Above all, they must lead to a deepening of our historic consciousness" (p. 29). It must be remembered that, since Croce, *storia* and *storicismo* mean something different in Italian from what they are usually taken to mean with us: for Croce, history is philosophy, and his philosophic system has received the name of *storicismo assoluto*. But as this identification of *storia* and *filosofia* has not yet been widely accepted beyond the frontiers of Italy, the sense of the expression "historical consciousness" ought to be defined. Otherwise one might believe that in Signor Pettazzoni's eyes the only possible value of a myth, a symbol, a divine figure, etc., is that of its own history, that is to say, in the last instance, the discovery of its "origin" and the description of its development (since "every *phainomenon* is a *genomenon*").

We, however, cannot believe that one may still, in the middle of the twentieth century, thus mutilate the significance of a spiritual value (of any spiritual value, not only of magicoreligious values). To reduce the significance of Dionysos to his origin and his history (Mediterranean god of vegetation, worshipped by conquered and subaltern populations) would be a little like reducing the *Divine Comedy* to the biography of Dante. Signor Pettazzoni fears that "the deepening of our historical consciousness"—the task which he proposes to the historian of religions—may have no other alternative than "a more or less exclusive psychologism" (p. 29). However, in the article in *Numen* in which he set forth a program, he opposed to history not psychologism but phenomenology; thus the alternative between history and psychologism does not seem inescapable. It is true that as soon as he suspects abandonment of the historical plan, Professor Pettazzoni fears a fall into the abstract and the intemporal, an attitude which may be explained by Croce's inability to work out an adequate conception of time. But everywhere in the history of religions the "intemporal" serves as a model for time. As for the danger of psychologism, it is perhaps less serious if one is to judge by the direction taken very recently by the psychology of the depths. A historian of the stature of Arnold Toynbee admitted that he would have reached an understanding of history more rapidly if he had known the work of Jung. And a

whole book was written recently to analyze the relations between history and the structures of the deep psyche (Ira Progoff, *Jung's Psychology and Its Social Meaning*, New York, 1953).

If he limits himself to historiography, the historian of religion runs the risk of seeing himself replaced one day by the man who is a historian and nothing more. If Greek religion is nothing but one aspect of Greek civilization and Greek history, then the historian can very well present it along with the social, political and economic history of Greece, or (what amounts to the same thing) the study of Greek religion will eventually be considered one of the numerous *fields* of classical studies: a man will become a historian of Greek religion as he becomes, by vocation or as a result of circumstances, an epigrapher, archaeologist or historian of economics. This would be equivalent to the disappearance of the history of religions as an independent science. Fortunately, by its mass and its rich complexity, all Signor Pettazzoni's work protests against such a hypothesis. The question may perhaps be reduced to a quarrel of words: what Signor Pettazzoni means is that the historian of religions must never forget that every religious phenomenon is at the same time a historical phenomenon—in other words, that it is conditioned by history—and on this point everyone agrees. The problem is to know whether the task of the historian of religion ends with the detection and analysis of historical conditionings or if he must go further.

The *opus maximum* of Professor Martin P. Nilsson, his great *Geschichte der griechischen Religion* in two volumes, has already been presented to the readers of *Diogenes* (see Olof Gigon's review in No. 3, July, 1953, pp. 128-131). But the activity of the Nestor of the history of religion is prodigious: while composing his *Geschichte*, the eminent Swedish scholar has published a large number of studies, among which—besides his *Religion populaire dans la Grèce antique*—we must note the second edition (increased by about a hundred pages) of *The Minoan-Mycenaean Religion* (Lund, 1950), the second edition of *The History of Greek Religion* (Oxford, 1949), the two volumes of the *Opuscula Selecta* (Lund, 1951, 1952), and a volume of hitherto unpublished studies, *Cults, Myths, Oracles and Politics in Ancient Greece* (Lund, 1951). The little book which has just been translated into French is a work of popularization in the best sense of the term: Professor Nilsson outlines briefly the results of the long and difficult research carried out by a whole generation of scholars on religious life in the rural districts of ancient Greece. He thus shows us aspects of religiosity which classical

mythology or the works of the scholars of antiquity generally overlooked. The description of rural beliefs and superstitions makes extremely profitable reading, especially the clear, condensed accounts of seasonal festivities (feasts of the dead, May days, etc.) which still survive in the Christianized folklore of modern Greece. Interesting, too, is the excellent introduction to the study of the mysteries of Eleusis (pp. 69 ff.), "the finest and most perfect flowering of popular Greek religion." Most aptly, the author recalls that "the silence imposed on the mysteries was well kept" and that "concerning the essential rites attached to the grade of *epopteia*, we have only general notions" (p. 70; see also p. 75). All that is known is that the Eleusinian mysteries were linked with the Thesmophoria, which proves that both ritual scenarios "were agrarian rites intended to foster the fertility of the grain planted in the earth" (p. 81). As for the myths of Demeter, Kore, Pluto and their relations with the mysteries of Eleusis, the author resumes the interpretations which he had already proposed in the first volume of his *Geschichte*: Demeter, the wheat mother, and Kore, the grain maiden, symbolize the old and the new harvest (pp. 84 ff.). In a few fine pages he analyzes "the moral and social consequences of agriculture" (pp. 95 ff.)—consequences which are illustrated by the opposition between the ideal of Homer's warrior knights and the ideal of the peasants expressed in the work of Hesiod. "I might even speak of an Eleusinian piety founded on the idea that agriculture engendered a civilized and peaceful life worthy of human beings" (p. 96).

All this is true and excellently said. The genetic relations and the relations of morphological structure between agriculture and the mysteries of Eleusis have been known and exploited by the majority of scholars. But since Professor Nilsson has already reminded us (p. 75) that we know nothing precise about "the essential rites attached to the grade of *epopteia*," we hesitate to follow him when he states that at Eleusis "there was no doctrine, but only a few simple, fundamental ideas concerning life and death—represented by the new harvest coming from the old" (p. 105). We know now that such "simple, fundamental ideas concerning life and death" may have great spiritual fecundity: the initiation rites of the primitives are an example. The fact that these ideas may have been, as Professor Nilsson believes, linked with "the new harvest coming from the old" does not in any way diminish their significance as great theoretical syntheses. The agricultural peoples, the *Urpflanzer*, as German ethnologists call them, worked out an admirable system of metaphysics on the basis of the connection which they discovered between food, death and sexuality. (See, in

Ad. E. Jensen's *Das religiöse Weltbild einer frühen Kultur*, Stuttgart, 1948, pp. 66 ff., the discussion of the mysteries of Eleusis apropos of C. G. Jung and Karl Kerényi's *Das göttliche Mädchen*, 1941.) We must note that what is meant is really a system of metaphysics and not a simple *Weltanschauung*, for among the *Urpflanzer* the link between the primordial murder of a divinity, the appearance of edible plants, and the necessity of sexual reproduction to assure the continuance of the human species which is menaced by death constitutes the explanation of ultimate reality as well as the justification of the present condition of life; the myth fulfills at the same time a cosmological and a moral function. Professor Nilsson doubts whether there was a doctrine at Eleusis, and he is probably right if he is thinking of a doctrine in the sense in which the term may be applied to the teachings of the Orphic theologians or the pre-Socratic cosmologists—that is, a systematic explanation of the ultimate realities. But a doctrine may also be found, though in an implicit form, in myths and symbols. Professor Nilsson remains faithful to the rationalistic method and language of his generation, and this is no reproach; but it obliges us to qualify his analyses by translating them into less dogmatic terms. On the other hand, certain statements seem to us difficult to defend: for example, his assertion that "the offering of the first fruits is pre-deistic, earlier than the cult of the gods" (p. 46). Now, among the primitives, a very large number of offerings of first fruits are consecrated to the gods. Some ethnologists even think that this type of offering is the oldest sacrifice of which we have any knowledge. The validity of this general explanation may be disputed; but the existence of offerings of first fruits destined for the gods can no longer be denied.

Of primary importance is the methodological lesson to be drawn from Professor Nilsson's work. He wanted to give us a brief but complete description of certain little-known aspects of Greek religiosity, and he has acquitted himself brilliantly of the task. His position in regard to the two sources of Greek religion is also significant: he tries to strike an even balance between the partisans of the primacy of the Mediterranean elements and their adversaries. In the first edition of *The Minoan-Mycenaean Religion and Its Survival in Greek Religion* (which dates from 1927), he rather strongly emphasized the importance of the Mediterranean elements, but rectified this position in the first volume of his *Geschichte* (pp. 481 ff.), and critics of the pro-Mediterranean school promptly made themselves heard (see, for example, Giovanni Patroni in the *Athenaeum*, N.S., XX, 1942, pp. 127-138; Umberto Pestalozza, *Religione mediterranea*, Milan, 1951, pp.

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191 ff., and *passim*). It should be noted in this connection that the importance of the Nordic elements (which Sir Arthur Evans's momentous discoveries had thrown into the background) has again been emphasized by the authors of certain recent works (cf., for example, Rhys Carpenter, *Folk-Tale, Fiction and Saga in the Homeric Epics*, Berkeley and Los Angeles, 1946; Karl Meuli, *Griechische Opferbräuche*, in *Phyllobolia für Peter von der Mühll*, Basel, 1946, pp. 185-288; E. R. Dodds, *The Greeks and the Irrational*, Berkeley and Los Angeles, 1951).

M. Gabriel Germain's rich and absorbing work is addressed as much to the Hellenist as to the historian of religions and the literary critic. The author devotes the first part of his *Genèse de l'Odyssée* to the "prehistory of some Odyssean themes" (pp. 11-390): archaic rituals (a royal ritual of the steppes: the bow of royalty and the "marriages by competition"; a pastoral ritual: the Cyclops and the cult of the Ram; an agrarian ritual: Circe's swine); metallurgical techniques and beliefs (the bronze dwellings, Aeolus and the bellows); magic and Yoga (the cattle of the sun and the magic of the huntsmen, beds and magic, magic plants, the food of forgetfulness and sacred poisons, the marvels of Yoga); certain supernatural beings (Circe, the peoples who eat no salt, the subjects of King "Strength-of-Mind," clairvoyant animals); archaic speculations (the journey to the land of the dead, the Sirens and the temptation of knowledge).

These examples show the breadth and the interest of the comparative research undertaken by M. Gabriel Germain in connection with "the prehistory of Odyssean themes." The author puts together series of facts which it would take too long to discuss properly within the limits of a review, but we may summarize some of his results.

In Book XXI of the *Odyssey*, Penelope "promises to marry whichever one of the suitors triumphs in an archery competition. The contestants will have to draw Ulysses' bow—a hero's weapon which it takes superhuman strength to use—then send an arrow with one shot through twelve axes placed in line. A queen and a kingdom will be the prize for this exploit" (p. 11). Now—and this fact seems to have escaped modern Hellenists—a similar episode is recounted in the two Hindu epics. On the occasion of the *svayamvara* (marriage by personal choice) of Draupadī, the contestants must draw a bow (so stiff that none, save Arjuna, can use it) and hit a target placed on the summit of a scaffolding. Similarly, in the *Rāmāyana*, Rāma succeeds in bending a giant bow and breaking it in the middle. Finally, in the *Lalita-Vistara*, the Bodhisattva wins a similar victory: he

draws a bow which no one could pick up, and the arrow pierces five shields, then seven trees and an iron figure in the form of a boar. "We are far from Ulysses' bow," wrote Ph.-Ed. Foucaux when he compared Râma's exploits with those of Buddha. But M. Germain's analysis points out clearly the elements which are common to all these stories: the hero wins his wife (or, in the *Odyssey*, wins her back), by winning an archery contest which includes the piercing of several successive targets (p. 24). The author also furnishes parallels to show that archery is part of the inaugural ceremonies of royalty (p. 45). In conclusion, he thinks he can discern the following stages in the diffusion of the theme: "1. The nomads of central Asia (Turco-Mongols or Iranians) invent the reflex bow before 3000. By this date the weapon is known in Mesopotamia. It probably reaches a part of the Indo-Europeans, future Hellenes or Aryans (in the precise sense of the term) before they are dispersed by the great migrations of the end of the third millennium. The story of the sovereign who wins his wife and his kingdom through his skill as an archer—which also comes from the steppes and is linked with known practices in the Indo-Iranian world—enters the aristocratic traditions of the future inhabitants of India and Greece. 2. It appears in literature for the first time, with the *Odyssey*, in the Greek world; later it appears with the epics and hagiographic stories of India. 3. One version penetrates Russia with the Mongols or Turks and survives orally to the middle of the 19th century, when it is picked up" (p. 53). One may wonder if specialists in the various historical disciplines would accept such a hypothesis. For our part, we wish to note only one important fact: in the *Rig Veda* there is a myth centered around the drawing of a bow. With his bow Indra looses an arrow which flies across a mountain and kills the boar which, on the other side of the mountain, is guarding the "treasure": a bowl of rice. Now, as F. B. Kuiper has recently shown, this myth is East Asiatic in origin even though it was assimilated by the Indo-Aryans as early as the Vedic period. Even the vocabulary is East Asiatic: the words for bow (*drumbhâli*), arrow (*bunda*), a bowl of rice (*odanâ*), the name of the boar (*Emusâ*) are of Munda origin. The historico-cultural perspective in which the episodes of the Hindu epic and of the *Lalita-Vistara* must be seen is consequently modified. As for the meaning of the contest, there seems no doubt about its role as an initiatory test: a "treasure," a wife, or a kingdom, rewards the hero. The fact that, in myths as well as in tales, such initiatory tests are linked with a *svayamvara* seems to indicate, as a historico-cultural context, the passage from a dying matriarchy to a society dominated by the ideology of the *Männerbünde*.

Apropos of the role of the Cyclops (pp. 55-129) M. Germain opportunely recalls the role of ogres in initiations: the terrible voice of Polyphemus is not lacking in resemblance to the great uproar that is produced in the initiatory hut (p. 82); the flight under the ram's skin might represent the departure of the initiate after he had symbolically become a ram in a cult dedicated to that animal (p. 86). After having reviewed the ram cults in the Mediterranean world (pp. 86 ff.) and in North Africa (pp. 103 ff.), the author concludes that "a relationship between Greek and Lybian facts, in the religious realm, does not seem *a priori* impossible" (p. 114). Though it has fallen into the domain of legends, "the episode of the Cyclops describes the initiation into a ram cult, of a very archaic character" (p. 128).

Circe's swine appear in the schema characteristic of an old agrarian ritual; the relations between the wild or domesticated pig and the forces of vegetation are abundantly shown (pp. 130-150). The author comes back to this question when studying the figure of Circe (pp. 249-275). Amidst her tamed beasts, Circe resembles Artemis, the Mediterranean and Asiatic *Potnia theron*; the isle of Circe recalls the Semitic sanctuaries surrounded by a sacred barrier, a paradise in the etymological sense of the word (p. 262). However, Circe does not seem to be, as M. Hiquily claims, "a goddess of mysteries": "the theme of the swine shows characteristics which are more folkloric than mystical" (p. 273). But even without accepting M. Hiquily's hypothesis one may observe that, among numerous *Urpflänzer* populations, swine are related to initiation ceremonies (cf. Jensen's *Das religiöse Weltbild*, mentioned above).

The two chapters devoted to metallurgical techniques and beliefs (pp. 159-191) are rich in new suggestions. "Bronze dwellings" often appear in tales of the supernatural, and they seem to be the dwellings of divine or extraordinary beings. The author goes on to say that the day iron came into current usage, bronze received the ritual value of stone (p. 173). As for Aeolus, he would seem to be the archetype of the blacksmith king. The story of the bellows and the winds is derived from metallurgical techniques; as he works his bellows, the smith draws the air into a bladder at will and expels it. The indication that the king's six sons married their six sisters bears an Egyptian imprint (p. 191). Apropos of the cattle of the Sun (the hides that move, the meat that moos while it is on the spit), M. Germain recalls a certain magic belief of hunting peoples according to which the animal is reborn from its own bones (pp. 196 ff.). Among the "marvels of Yoga" he classes Proteus, whom he considers comparable to "sarcastic gurus," Milarepa, for instance (pp. 232 ff.). "The spiritual master

reveals himself only to the one who seems to him capable of supporting the weight of knowledge" (p. 236). It would have been still more exact to say that all these tests have an initiatory character. The author compares the "winged sandals" to certain results of Indo-Tibetan Yoga (pp. 238 ff.), and the pilotless ships remind him of the chariot Puçpaka which, in the Râmâyana, went wherever its master directed his desire (pp. 243 ff.) Comparing the adventure of Ulysses to the well-known Egyptian account of the shipwrecked sailor (pp. 299 ff.), he finds many points in common, but "it must not necessarily be concluded that our episode has its origin in the version of the skipwrecked sailor which has come down to us" (p. 305). The ritual interpretation of the whole episode proposed by M. Mireaux (an agrarian fecundity rite celebrated at the beginning of spring) does not seem to him convincing (p. 314).

A rather long chapter is devoted to the *Nekya* (pp. 329-381), to which the nearest Oriental parallel is Gilgamesh's journey to meet Up-napishti. The author thinks he can see the influence of Asiatic pessimism (p. 351). However, "one cannot escape the final impression that the poet felt the grandeur of his subject but that he did not develop it either in an entirely epic or an entirely religious way" (p. 370). This is one of the general conclusions of the work: the *Odyssey* abounds in Oriental and archaic elements, but the poet seems to have neglected or ignored their religious significance. The raft of Ulysses has an Egyptian form (pp. 403 ff.), and Hornell has shown that Egyptian shipbuilding is related to that of the Indian Ocean, not to that of the Mediterranean. Like Hesiod, Homer seems to owe a great debt to earlier—and thus Oriental—cosmogonic ideas, which were also common to Orphism (p. 522). Between the *Odyssey* and the epic of Gilgamesh there exists "a succession of episodes which certain characteristics bring together" (p. 422), but there also exist differences: Ulysses, in the *Nekya*, is hunting for practical information, not the secret of life (p. 423). "The difficult thing is not to find a mystic significance behind an Odyssean episode. Almost all have their sources in traditions whose origins go back to practices or speculations of a religious nature. The difficulty begins when one feels the need of organizing them into a whole animated by the same spirit and tending to show a coherent sense" (p. 630). The problem could not have been better expressed. But is the coherence of myths and traditional stories of a rational nature? The author continues: "In these real tales that are formed by the episodes of the Lotus Eaters, the Cyclops, Aeolus, Circe, the island of the Sun, one cannot find the slightest indication that the poet ever considered

them otherwise than as good stories. In the revelation of Achilles, the temptation of the Sirens, we believe we caught the reflection of higher thoughts, which go back much further than our author and are foreign to the traditions of his people. But it seemed to us that he did not himself perceive all their value" (*ibid.*). Here M. Germain raises the very delicate problem of the interpretation of literary works: to judge the value of a literary work, must one limit oneself to what the author consciously wanted to say or thought he was saying? It is not certain that this is M. Germain's thought: quite aptly, he speaks (pp. 511 ff.) of the Odyssean "world of the imagination," which must not be opposed only to the geographic world in the narrow sense of the term, but also to every "profane" world—that is, every world which draws its significance only from the conscious level. One wonders, then, whether the episodes of the Cyclops and Circe can have been considered by the poet merely as "good stories." After two centuries of rationalism, a modern critic finds it difficult to consider them as such; it is hard to see why Homer would have been more rationalistic than our contemporaries. M. Germain speaks of a "progressive fall, from transmission to transmission, from the rite to the tale, from the sacred to the supernatural" (p. 634), and that is true. But one must also remember that the "supernatural" prolongs and disguises myths, even in a society which, like ours, has lost its sense of the sacred.

Studying the "world of the imagination," M. Germain has written some fine pages against the "intrepid localizers"; he has also shown the non-historical structure of mythical time, the importance of conventional numbers (cf. also his complementary thesis, *Homère et la Mystique des nombres*, Paris). One regrets, however, that he did not treat the problem of the genesis of the epic, the passage of myth and legend to oral literature. "Preliminary work would have to be done around many other epics in order for us to know what weight must be given to these parallels and whether, in this way, some truth of a general and permanent nature might be reached" (p. 677). But this work has already been done by Kershaw and Nora Chadwick in the three enormous volumes of their *Growth of Literature* (Cambridge, 1932-1940). It would have been interesting to know what M. Germain thinks of the general hypothesis of the two British scholars on the origin of the epic. Similarly, one would have liked to know what he thinks of the Italian pro-Mediterranean school, of the work of Patroni, Pestalozza, Momolina Marconi on Circe, Calypso, etc., and especially of the *Commenti mediterranei all'Odissea di Omero* (Milan, 1950), the voluminous, prolix but brilliant work of Giovanni Patroni. Though

M. Germain's information seems rather rich, one has the impression that for his comparative research he used chiefly manuals and works of synthesis (which is always dangerous for the student of comparative religions or literatures who is preoccupied with some special problem). Specialized reviews, even those in the field of Hellenism, are rather parsimoniously cited. The author warns us in his preface: "The difficulties of documentation in a country which is very unevenly equipped in these fields, like Morocco, where we planned and carried out our work; the isolation into which the war plunged it even more completely than it did Europe; the difficulty of communications in the years which followed the end of hostilities—all this delayed and complicated the final elaboration. Some of the gaps in our work have no other cause" (pp. 5-6). In these few lines it seems to us that we read the threat of a very great danger: on the one hand, except for a few cultural centers, students run the risk of having only outdated information at their disposal; on the other hand, if one does not appeal to the collaboration of scholars working in various fields, all comparative research, however laborious, runs the risk of being incomplete and even distorted. The whole future of the history of religions depends on rapid circulation of exact information and broad cooperation among the specialists in numerous fields, from prehistory and archaeology to ethnology and folklore.

BOOK REVIEWS

A. W. Macdonald

A History of Chinese Philosophy, Vol. II

BY FUNG YU-LAN, TRANSLATED BY DERK BODDE

(Princeton, N.J.: Princeton University Press, 1953.) Pp. xxv+783.

China's Gentry, Essays in Rural-Urban Relations

BY HSIAO-TUNG FEI

(Chicago: University of Chicago Press, 1953.) Pp. 287.

A Documentary History of Chinese Communism

BY C. BRANDT, B. SCHWARTZ AND J. K. FAIRBANK

(London: George Allen & Unwin, 1952.) Pp. 552.

The monumental *History of Chinese Philosophy* by Dr. Fung Yu-lan¹ was

1. *Geschichte der alten chinesischen Philosophie, Geschichte der mittelalterlichen chinesischen Philosophie und Geschichte der neueren chinesischen Philosophie* (Hamburg, 1927, 1934, and 1938). A shortened, popular version of Dr. Fung Yu-lan's *History* appeared in the English translation of E. R. Hughes, London, 1947: *The Spirit of Chinese Philosophy*. See also *A Short History of Chinese Philosophy*, edited by D. Bodde and published by Macmillan in 1948 (French translation with Preface by P. Demiéville, *Précis d'histoire de la philosophie chinoise*, Paris, 1952).

originally published at Shanghai in 1934. The first half of an English translation of that work, undertaken by D. Bodde, today Professor at the University of Pennsylvania, appeared at Peiping in 1937. Princeton University Press has now published the second half of this translation and has also re-issued with corrections and addenda the first volume, which was for long difficult to obtain, making available in a western language this full and competent study

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of Chinese philosophy. Of course there already existed a considerable number of histories and syntheses of Chinese philosophy by western Sinologists, and among these the most considerable was the three-volume work by A. Forke. But among works of this kind, the English text of Professor Bodde is sure to occupy a place apart for many years to come. It is a book which will and can only be read critically, in a philological sense, by competent Sinologists. However the cultivated public, ignorant of the Chinese language, but interested as perhaps never before in the culture and history of China, will certainly be grateful to both author and translator. Sinologists will doubtless quibble over the translation of particular terms; but the general reader, with a justified feeling of over-all confidence in Bodde's text, will be attracted by other aspects of this work. In the first place, it is a book written by a Chinese for a Chinese audience. There is the fact that the author employs the method of direct quotation from his sources, which makes his work a sort of anthology of Chinese philosophy. In the choice of the documents which constitute this anthology the primary aim of the author has been to illustrate the history of ideas in China. In the first volume Dr. Fung Yu-lan has studied the period from 600 B.C. to ca. 100 B.C., "the period of the Philosophers," during which China was split up into many mutually hostile states. Only towards the end of this period did Confucianism emerge from the conflicting philosophical schools to become the state orthodoxy. In the present volume, the author covers "the period of classical learning." In

221 B.C. the Ch'in had terminated the conquest of the rival states and had created a unified empire. Thus this second period, which extends from the second century B.C. up to the twentieth century A.D. (and therefore overlaps slightly the ground covered by the first volume) is characterised by a greater degree of political unity and dominated by three main schools: Confucianism, Taoism and Buddhism. One of the most noteworthy aspects of this second volume is the considerable space devoted to the discussion of Buddhism in China and its critics. In characterising this second period as a whole the author remarks that "the wine brewed by the philosophers of the period of classical learning, regardless of whether it was new or old, was poured into the bottles of the ancient philosophy, and for the most part of Confucian classicism. Only very recently indeed have these old bottles been broken." It is with the death of Liao P'ing in 1932 that the author brings his narrative to a close. By then it had become impossible to continue to absorb the rising flood of western ideas in the traditional systems of Chinese thought. For the period from 1932 up to the present day, it is not without interest or value to point out that Dr. Fung Yu-lan, since his return to China from America, has been converted to Marxism, and is in fact the author of a much-publicised auto-critic. In the light of certain articles which have appeared more recently, one imagines that were Dr. Fung Yu-lan to settle down to rewrite his *History* he would probably find it necessary to make considerable alterations in his text.

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The second book under consideration, *China's Gentry, Essays in Rural-urban Relations*, is also due to Sino-American collaboration, Hsiao-tung Fei, a sociologist trained under Malinowski at London, and well-known in the West as the author of two monographs,² dictated to Mrs. Robert Redfield in 1948 at Peiping (which was at that time on the point of falling into the hands of the Communist forces) English translations of various articles he had contributed to Chinese newspapers during 1947-48. The purport of these articles, which form the matter of this book, was, while analysing the current political situation in the light of past events, to explain why Fei had personally decided to remain at Peiping and give Communism a trial. As Professor Redfield points out in his introduction: "The essays give a Chinese point of view on China. They are not written to put a good face on things, or a dark face. They are written to help the Chinese to reach understanding of their troubles." Their limitations as serious systematic studies of the revolutionary period are obvious; for they discuss only a few of the ills that China was heir to. But the style as much as the matter of Fei's arguments is likely to interest western readers; for in these pages quotations from the Chinese classics jostle arguments drawn from Marx and Sorokin. It is doubtless an over-simplification to see, as Fei does, the roots of the Civil War as stemming primarily from the Conflict between the privileged rentier class and the rural population. Indeed this book is most unlikely to meet with

the approval of the professional sociologist or Sinologist. Nevertheless one closes it with the conviction that Fei's analyses contain a greater parcel of reality than is the case with many a learned schoolroom analysis. His articles, which make exciting reading, are followed by six life-stories of Chinese gentry collected by Yung-teh Chow in Yunnan between 1943-46. The lack of comparable background material makes it quite impossible to judge whether it would be subtly right or wildly wrong to take these life-histories as typical. However, Professor Redfield is to be congratulated on the publication of this volume and it is to be regretted that its high price will prevent its having a very wide circulation.

As Redfield writes in his introduction to Fei's *Essays*, the author "does not discuss the general effects in China of that great awakening of the ill-fed, overworked two-thirds of the human race who live chiefly in Asia which is such an immense event of our times." The same is true of the work by Brandt, Schwartz and Fairbank. For their book, *A Documentary History of Chinese Communism*, is not a general study of the Chinese revolution, nor of Chinese Communism, but a documentary study of the party line in China from 1921-50. The main outlines of this period are beginning to be well-known in the West. One recalls the alliance between the Chinese Communist Party and the Kuomintang, Li Li San's stubborn efforts to found power on the weak city proletariat, the rise of Mao Tse-tung as a peasant-organiser in the southern hills, the Long March, the United Front from 1937-45 and then the Civil War:

2. *Peasant Life in China* (London, Routledge & Sons, 1939) and *Earthbound China* (Chicago, University of Chicago Press, 1945).

thirty years of misery and bloodshed which form the background of this group of documents. These forty documents have been extracted by the authors from a mass of material mainly in Chinese, occasionally in Japanese or Russian, and were selected because they "mark significant stages or aspects of the ideological development of the Communist movement in China." The translation of each document has been based on or checked with the original and details of the origin of the documents are given in a bibliography. Uniform renderings of a number of key terms are to be found in a glossary, Chinese names being given with characters. There is also a chronology of the Communist movement in China for the years in question. In addition, the authors have furnished commentaries on the texts and these, along with their concluding comments, form an adequate introductory analysis of the documents. The book was finished in June, 1950, and it is important to note this fact, for it would be easy but unjust to question some of the authors' tentative conclusions in the light of more recent events. It is to be hoped that further books of documents of an equally high standard of editing will be made available. Despite or perhaps because of the narrow and self-imposed limits that the authors have set themselves, this first book of documents provides the western public with a balanced survey of source material which is of primary importance for any subsequent and wider studies of communism in China. It aims to be factual rather than speculative, explanatory rather than critical; and these are rare merits in present-day analyses of the Chinese political scene.

Here then are three very different books which tell us something about certain aspects of the Chinese past and present. It is perhaps true that the non-Sinologist is better informed about the fairly remote Chinese past than he is about the present condition of that great country. Paradoxically, it is perhaps the Sinologists themselves who are responsible for the plain man's ignorance in this domain. For the Sinologists are the general reader's source of serious reference and for reasons which it would be out of place to analyse here, Sinologists have interested themselves primarily in Chinese past history. Very few of them have devoted their lives to a study of post-eighteenth century China. For example, one of the most serious analytical studies of Chinese thought yet undertaken is surely that by Marcel Granet: *La pensée chinoise*. That work was founded largely on early historical data and when, after reading it, one turns to the documents studied by Brandt, Schwartz and Fairbank it is only with a considerable effort that one realises he is reading about the same country, that these are Chinese documents and that Dr. Fung Yu-lan is today a Marxist. It does not seem that Sinologists have done all they might to explain to us the birth of and the necessity for this new China. How was it that "in a social-psychological sense the Mandate of Heaven finally passed into the hands of Mao Tse-tung?" We shall not find the answer to that vast question in any of these three books, but each of them provides us with solid elements for an understanding of the scene in which the transition occurred.

Wirtschaft ohne Wunder (Domestic Economy
without Miracle)

BY L. EINAUDI, F. A. HAYEK, W. RÖPKE, AND OTHERS

(Zürich: Eugen Rentsch Verlag, 1953.) Pp. 359.

Dr. Hunold, director of the *Volkswirtschaftliche Studien für das schweizerische Institut für Auslandsforschung* (Political-Economic Studies for the Swiss Institute for Foreign Research), should be congratulated on his happy choice of subject. The first book in his series was entitled *Plein Emploi, Inflation et Economie planifiée* (Full Employment, Inflation and Planned Economy); the second, which we here present, concerns the German economy. Twenty authors, all well qualified, explain in it why the spectacular resurrection of this economy is not a miracle. Nothing is more timely or more useful, for, given that the supernatural plays no part in this extraordinary revival, it becomes pos-

sible for all peoples to study this example with profit.

The book is divided into three parts: general foundations, application, and particular problems. The first part is the work of President Luigi Einaudi of Italy, F. A. Hayek, University of Chicago, W. Röpke (whose contribution is particularly important since he was the theorist of the German experiment), and Alexander Rüstow of Heidelberg. The second part contains studies by F. Baudhuin of Louvain, Ludwig Erhard, German minister of economics and the man chiefly responsible for his country's recovery, Harry D. Gideonse, president of New York's Brooklyn College, Dr. Franz Nemschak of Vienna, and Jacques

Rueff, President, International Council for Philosophy and Humanistic Studies. The last part includes exposés by Paolo Baffi, director of economic studies of the Bank of Italy in Rome, Fritz W. Meyer of Bonn, Carlo Mötteli, one of the editors of the *Neue Zürcher Zeitung*, and three citizens of Frankfurt: R. Mueller, Volkmar Muthesius (whose articles are familiar to readers of the *Zeitschrift für das gesamte Kreditwesen*, and Erich Welter, of Mainz.

Although they are all centered around the German economy, these contributions are very diverse. Some authors, like President Einaudi, discuss general problems; others, Baudhuin, Gideonse, Nemschak, engage in discussions of comparative economy; Herr Erhard takes the European point of view while Röpke and Rueff limit themselves to Germany; several writers consider only certain aspects such as currency reform and foreign commerce. We shall therefore disregard the order of the studies and try rather to present a synthesis, indicating references as we go along.

First, let us review the facts. Germany, after its defeat, was in a desperate situation. The flow of refugees had increased its population by one-third, while its cities were in ruins and its factories dismantled; industry in 1945 was at the 1860 level; agricultural production was reduced by 40 per cent; unemployment was rife; and the direction and control of German territory was shared by four foreign powers (R. Mueller, p. 311). It was in this situation that the currency reform was applied on June 20, 1948. After that everything

changed: in five years agricultural production doubled, industrial production tripled, unemployment was absorbed, real wages increased by half, more than seven thousand million marks in gold and notes flowed into the till, and the Deutsche Mark became one of the strongest currencies in the world. What had happened?

At the beginning of 1948 two courses were open to the leaders of Western Germany—one (followed by the majority of states) which may be described as Keynesian, and the other that of liberty, the choice of a small number of nations, notably Switzerland and Belgium.

The aim of the first course is full employment—a phrase which has been popularized to the point of a catchword. In the words of the man in the street, its essential goal is to furnish work to the labor force. This work is a function of the development of business enterprise, that is, of investments. Normally, savings provide investments, but savings are insufficient and the state is invited to supplement them by credit expansion. In this way, it is supposed, the twelve million refugees might have found jobs. The details of the reasoning are well known to theorists: the increase in the volume of money drives the interest rate down, incites business leaders to expand their operations through new investment, and thus brings about an over-all increase in production and revenue which is several times greater than the sum originally invested to cause the rise (theory of the multiplier). Inflation need not be feared so long as the limit

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of productive capacity is not reached—a vague and distant possibility. If the threat becomes serious, then the public powers must take all the measures which constitute “repression of inflation,” such as price control, control of currency exchanges, rationing (W. Röpke, p. 80).

It is paradoxical that the Allies, obeying Marshall Plan officials, New Dealers, Socialists or Laborites, recommended to defeated Germany a program which probably would have restored National Socialism. In June, 1948, General Lucius Clay telephoned to Dr. Erhard to urge him to maintain control over markets and received the negative answer he should have expected. In 1950 the Allies asked the German government to present them with a program of credit expansion, accompanied by measures for stopping the inflation which might result from it, under threat of blocking Marshall Plan counterpart funds.

Hypnotized by the “great depression,” Lord Keynes feared deflation, a source of unemployment, and not inflation, from which the Germans had suffered so much. He looked at the first danger with a telescope but looked at the other from the opposite end of the glass (W. Röpke, p. 94). In any case his thesis is incomplete, for it rests on general conceptions and therefore gives an over-simplified and inexact view of reality. More often than not, when there is full employment in one branch of activity, there is unemployment in another, so that even in the most favorable case inflation remains latent.

On the other hand, workers com-

plain of unjust distribution in a free-market economy. But even without a thorough examination of the problem, it appears that in Germany this economy is singularly favorable to the workers, since their living standard has increased 40 per cent since it was established.

The merit of the German leaders is to have rejected the Keynesian ideology of planning, still so much alive in England and France, and to have adopted a realistic policy by following the second, classic course, despite the objurgations of outdated theorists. After the situation had been cleaned up by means of a Draconian currency reform, the suppression of directives, controls and price-fixing blew the fresh air of liberty across the economy, which was re-invigorated and developed magnificently. The individual ceased to be shackled by the imperative demands of a fixed plan and was able to give free rein to his initiative. The price mechanism guided him toward the manufacture of the most-wanted merchandise and the most productive occupations. Fraud and the black market, natural consequences of all economic control, disappeared. Neither men nor circumstances were suddenly transformed during the night of June 20–21, 1948; it was the principle of order that had changed (J. Rueff, p. 212).

We must not be transfixed with admiration for the currency reform which was put into effect on this date: it was not this which caused the rise we have described. The currency measure took the drastic form of a cancellation of 93.5 per cent of the value of notes

and bank accounts. The operation would have been dangerous in a country like France, where it might have provoked a deflation, but it was salutary in Germany, where a "repressed inflation" was rife (P. Baffi, p. 225).

The *deus ex machina* was, rather, the application of the liberal system or, more precisely, of the neo-liberal system as it was established in the Dusseldorf program of July 15, 1949, on the eve of the Bundestag elections. Controlled economy was rejected as was the old Manchester type of liberalism; the *soziale Marktwirtschaft* was instituted. This untranslatable term signifies the establishment of a market which plays its classic role of selection and guidance within an institutional framework fixed by the state. "The character of society and the type of liberty are Siamese twins" (C. Morteli, p. 306). The reader will do well to refer to works on neo-liberalism if he wishes to understand this complex system in which the state retains a great authority and exercises it for the benefit of the individual, insures the functioning of the price mechanism without believing in its spontaneous establishment, and tries to make economic laws work in conformity with the general interest, without directly intervening in the market. Thanks to this controlled liberty there is new confidence in savings, and enterprise again becomes dynamic (L. Einaudi, p. 23). The "German miracle" is nothing more or less than the putting into practice of the neo-liberal teachings (J. Rueff, p. 221).

It goes without saying that the recovery of the German economy was

not devoid of difficulties. Herr Erhard tells us of its vicissitudes. The European Payments Union had the advantage of putting an end to bilateralism, but the Korean war brought about a rise in prices and thus endangered the equilibrium which Germany had reached on the international plane. Nevertheless, the government maintained its liberal position, despite an increase in Germany's EPU deficit, and it very honestly used American credits to support the mark and not to make up budgetary deficiencies or to maintain a costly system of controls, as did some other countries which were less well inspired.

Today the public powers in Western Germany are reaping the fruits of their wisdom: the situation is flourishing, and far from considering a policy of austerity, as some had suggested, the country is following a policy of economic expansion (L. Erhard, p. 149). This policy is being successfully carried out by two men of opposite character whom Adenauer was clever enough to place side by side so that they might combine their efforts: Fritz Schäffer, a man of precise mind, "a conscience in figures," and dynamic, imaginative Ludwig Erhard. "Schäffer calculates, Erhard gambles," it is said in Bonn. The formula is exaggerated, but it does typify the two men.

The reader may wonder whether the German success did not also have extra-economic causes. The adoption of neo-liberalism presupposes a mentality already convinced of the excellence of this system; the price mechanism, certainly, is not enough in itself; a predisposition

on the part of the people is called for—that is to say, a certain sociology, a certain moral attitude (H. Gideonse, p. 186), and above all a certain psychology. This latter, in the final analysis, constitutes the essential basis of all economy. The so-called mechanical forces of the market are the expressions of human wills, conscious and acting in a climate of liberty. Each of us has his share of responsibility for the way they interact (E. Walter, p. 351).

This is not all. Social democracy, by embarking on a program of socialization, would have led the country in the direction of totalitarianism, that is, towards a rapprochement with communism, ideologically at least. The duty of the thinker today is to initiate a program opposed to that of the communists—and the most effective program, as Germany's example shows, is that of neo-liberalism. This, consequently, is the program which must be studied, publicized and applied (A. Rüstow, p. 97). It is not enough to know that one is on the side of truth, for truth does not impose itself; one must struggle to spread it and permit it to triumph (E. Walter, p. 356).

Historically, the German experiment presents itself as a reaction against an evolution which, especially since the beginning of the twentieth century, tended to modify the old conception of liberty expressed in Great Britain in the eighteenth century as the *rule of law*. The law, it was said, is intended to limit and moderate power, to circumvent the arbitrary judgments and inconsistency of men; judges are only "the mouths which pronounce the words of

the law," as Montesquieu put it. But socialist theorists and practitioners upset this concept by proclaiming (in H. Finer's words) that "in a democracy, right is what the majority wants it to be." Germany today is returning to the traditional doctrine (F. Hayek, p. 33).

Belgium's experience, we see, completes and reinforces that of Germany. A long illness cannot be cured by waiting for fortuitous circumstances; it can be cured only through conscious effort in an atmosphere of individual liberty and responsibility (F. Baudhuin, p. 127). And in Austria, where two powerful parties reign, one bourgeois and the other socialist, a third way is being sought to bring about order in liberty (F. Nemschak, p. 203).

Finally, the creation of a free Europe, a federation of states which have liberated themselves, is not unthinkable. Some attempts at rapprochement were made before this liberation, but they were premature and failed for that reason—like the meeting in Torquay where the participants might have adopted as a slogan: "Protectionists of the world, unite!" as Herr Erhard facetiously suggests (p. 152). As for the Schuman Plan, it has two aspects, one positive (the formation of an international market), the other negative (the creation of a supra-national system of controls). Everything, then, depends on the men who may be in a position to insure the predominance of one or the other of these possibilities (L. Erhard, p. 153).

In conclusion we should note that much remains to be done in Germany,

for fiscality and interventionism, "two branches of the same trunk," are wastes which are very slowly eliminated. Five years is too short a time to hope for complete success (V. Muthesius, p. 338). But destiny is favorable. Germany is "beyond the quota" in the EPU—in other words, its credit balance is so large that whatever excesses it may have from now on will be paid entirely in gold. So there is more and more talk about convertibility of the Deutsche Mark in the near future (F. W. Meyer, p. 284). It is true that the interest rate is high, but for this very reason German capital is kept at home and will even attract American capital as soon as the mark becomes convertible. At that

point, however, it is probable that Dr. Erhard will find it advisable to get out of the EPU in order not to be obliged to give unconditional credit to members of the Union, and to be enabled to hand over capital only to those who offer commercial advantages in exchange.

Finally, Chancellor Adenauer's electoral successes in these last years give clear assurance of the triumph of neo-liberalism. In vain the German socialists have tried to win enough favor with the middle classes to make up for the rebuffs they have received from the workers. The country of Hegel and Marx is becoming the country of economic freedom.

*Renaissance to Reformation: A Critical Review of the
Spiritual and Temporal Influence on Medieval Europe*

BY ALBERT HYMA

(Grand Rapids, Mich.: Wm. B. Eerdmans Publishing Company, 1951.) Pp. 591.

In this volume Professor Albert Hyma once more deals with the arguments and historical problems of the Renaissance and the Reformation which have already furnished material for many of his previous books. He does so not only in order to make them more accessible to a wider reading public and to synthetise in one volume the results of his patient research but also to test the validity and consistency of his previous conclusions in the light of later studies and investigations. The body of the large volume is made up of the chapters on Erasmus, on the "Devotio moderna," and on the political and economic thought of Luther and of Calvin;

but of notable interest are also the pages in which the writer deals with Church and State in the Middle Ages, with politics during the Renaissance period, with the French reformers "before the Reformation" (in which, as would be expected, much space is allotted to the well known research work of Renaudet on Standonk and on *Préréforme et humanisme à Paris pendant les premières guerres d'Italie*), and on protestantism and the origin of capitalism. An entire library of volumes, essays, articles and polemical notes has been written about these problems and it would be impossible to attempt even to summarize them here. The author, however,

shows that he possesses a sound knowledge of the essential limits of the questions treated, as well as a wide acquaintance with critical literature—which we could have wished to find more carefully and systematically quoted and discussed; and even one who does not use his criteria for methodological arrangement, and does not always agree with his conclusions, will admit that this book draws effectively the lines of a general interpretation of European culture, and that its sub-title is therefore not over-ambitious.

Some points, however, must be raised: the volume proposes to delineate the essential aspects of the Renaissance and Reformation through the examination of problems of special historic interest, but does not, however, succeed in fusing these in one coherent review of the subject, and in avoiding the pitfalls of non-essential details and unjustified omissions. Professor Hyma is well aware that the differences between Marsilio of Padua and Occam, between Machiavelli and Thomas More and, in general, between the culture of the Italian Renaissance and that of the European Renaissance are many and profound, nor does he fail to warn the reader repeatedly of this fact. But this warning rarely goes beyond pure and simple statement, and does not develop into concrete historical research into the genesis and development of the thought and cultural movements he is examining. Thus, Occam follows Marsilio, and Thomas More follows Machiavelli, without any attempt on the author's part to give a historical explanation of the differences, which he himself knows

as basic, between these specific political conceptions. Similar observations could be made concerning what he says about the attitude of Lorenzo Valla and of Machiavelli towards the Church and the Popes: they are placed on a common footing as regards their hostility towards those institutions, and, once again, without any attempt to investigate the nature and individuality of their respective positions. This is undoubtedly a defect in the author's critical attitude, and it becomes even more clear when the problem is no longer that of justifying differences between various types of culture, but rather that of grasping the intricate connection between political thought and the historical situation. The author clearly realises that it is generally impossible, in tracing a political thought, to follow the extrinsic coherence and the reciprocal inference of the parts which constitute it, and his preoccupation is to understand the historical climate in which the thinker is evolving his ideas, and the political problems that stir his passions and stimulate his thought and expression. With Marsilio da Padova he tries, accordingly, to catch the reflection of the changed historical conditions under which that thinker was living ("Marsilius reflected the age of turmoil in which he lived," p. 49), and in this he finds the reason for which he, "unlike Aquinas, paid less attention to literary sources than to actual conditions" (p. 50). "In the midst of the bustle of a rapidly rising flow of commerce and industrial activity, and aided by the contact with many foreign lands, both European and Asiatic, the

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Italian communes had become restless and chafed at the fetters which the Canon Law and the papal chair had employed to restrict local independence and the incipient development of capitalisms. It was very well for Aquinas to reason coherently and somewhat abstractly about monarchy, but Marsilius saw the need of new bottles for the new wine of commercialism and political ferment, which threatened to burst the old bottles provided by the Canon Law, the Corpus Juris Civilis, and the writings of the scholastic philosophers" (pp. 49-50). In the above passage, except for the remark about Thomas Aquinas with which it seems to us quite impossible to agree, there is undoubtedly a notable attempt on the author's part to individualise the historical genesis of Marsilio's thought; nevertheless, the reader of the foregoing pages in which this thought is treated has the impression that the preceding considerations do not balance with this later account, and that, between the two, it is not possible to trace the connection which the writer seems anxious to establish.

Even more significant in this sense are the pages on Machiavelli in the chapter concerning "Politics in the Age of the Renaissance." Here, in order to justify for himself the unusual tone of Machiavelli's reflections, to arrive at a solution to the mystery of a thought so implacably interwoven with cruel and, we may well say, perverse maxims, the author tries to enlist, as an "accomplice," the age itself—a time of semi-paganism, of individualism, of merciless criticism of Church and of Pope. What could be expected, he seems to ask, from a

writer who wasted his wits on a world of that kind? And so Professor Hyma finds it natural that Machiavelli should write the disconcerting Chapter XVIII of the *Principe*, that hitherto unheard-of profession of programmatic rascality and betrayal of bonds; natural, too, that he should judge as he did the deeds of the son of Alexander VI, "the notorious Caesar Borgia" (p. 108). Must one point out that Machiavelli's thought, far from having been understood in the context of his age, has not even been faintly clarified, despite the efforts of many would-be interpreters? The fact is that Hyma bases his judgment of the Renaissance on biased texts, certainly worthy of the greatest respect, but antiquated and inadequate. The judgment of history renders justice and gives their rightful place to the works of Symonds, Monnier, and to Burckhardt's great work; but it does not recognise "immortal works" and Professor Hyma, who considers the works of Symonds as such, has paid the price of his own subtle ambiguity. He speaks of the paganism of the Renaissance, but he has not troubled to discuss the opinions of more up-to-date historians (certainly not unknown to him) who have given much labour and learning to the task of placing this question within its right limits. If he had taken these works into account, not alone Machiavelli's thoughts but the thought of the Renaissance as a whole would have doubtless appeared to him in a more elastic perspective. To bring this about the author would also have had to enlarge the historical range of his own researches, to cover, for example, that vein of mingled magic

and astrology which historians such as Boll and Cassirer had for some time noted, and which in recent times, in his particularly penetrating studies, Garin has proved to be essential to a real comprehension of the culture of that period. This vein of magic and astrology, interestingly enough, is found not only in Italian writers of the time, but throughout Europe: whoever follows it in its developments, sometimes subterranean and tortuous, can succeed in discovering bonds and connections which at first sight might easily escape attention.

Concerning another aspect of Renaissance culture, Professor Hyma, who has been making a special study of the Italian humanists, ought not to have entirely overlooked that type of Florentine civil humanism which is fundamental, as shown by the studies of Baron and Garin, for the comprehension in a new light of certain aspects and developments of Italian culture. We do not raise these objections from a taste, always questionable, for seeking out and indicating uncertainties and lacunae in the researches of a historian of great merit, but because it seems to us that a broader and less schematic consideration of Renaissance culture would certainly have enabled him to write with more precision on the problem of the cultural formation of Erasmus, which is the central point of his book. It is not possible to enter fully

here into the merits of this problem, but a minute and profound study will perhaps incline specialists in matters Erasmian towards this conclusion.

The preceding criticisms should not cause any misconceptions as to the high value of Professor Hyma's research work. So numerous and complex are the points touched on by his analysis, so interesting his arguments, that to deal with them in detail would require not only a minute and highly specialized examination of the various questions, but, above all, much more space than can be reserved for a book notice. We must limit ourselves to saying again that the author's general interpretation of the Reformation admits of criticism and reservation. The student will certainly profit greatly by reading not only the studies on Erasmus, but also the pages on the economic and political thought of Luther and Calvin. In them are assembled, with precision and respect for the texts, their essential lines of thought.

This book may, and probably will, arouse dissent, and be much discussed, and it would be interesting to discuss it, point by point, without space limitations. It must undoubtedly be considered as a particularly useful medium of reference for anyone who, among the many problems examined by its author, has chosen one or another for special study and reflection.

Notes on the Contributors

RAFFAELE PETTAZZONI, born in 1883, is auto-didact in the history of religion, having devoted himself to that discipline after preparatory studies in philology, archaeology, and ethnology. While acting as director of curriculum at the University of Bologna, he was called, in 1923, to the newly created chair of history of religion at the University of Rome. He is founder and director of the *Studi e materiali di storia delle religioni*, editor of the series "*Storia della Religione*" and of the "*Testi e documenti per la storia delle religioni*," and editor in chief of *Numen*, international review of the history of religion (Leiden, Brill, 1954). He has written numerous works on various aspects of the history of religion, two of which are reviewed by

Mircea Eliade in this issue. *The All-knowing God* (London, Methuen, 1955) is his most recent publication.

DARYLL FORDE is professor of anthropology at the University of London and director of the International African Institute. He has pursued field research in prehistoric archaeology in Europe and in ethnography and social anthropology in North America and West Africa. He is author of *Habitat, Economy and Society*, editor of collected studies on *African Systems of Kinship and Marriage*, of the *Ethnographic Survey of Africa*, and of the journals *Africa* and *African Abstracts*. Professor Forde has cooperated with UNESCO in organizing research and publications on the

social systems, cosmological ideas, and social values of African peoples and in the study of the social effects of industrialization and urbanization in Africa today.

BERTRAND DE JOUVENEL, born in Paris in 1903, is president of the Association to Study Economic Expansion and director of its research bureau. He has written a number of works having to do with the distribution of power and the political good, most notably his *Du Pouvoir* (Geneva, 1945). His latest work *De la Souveraineté. Recherches sur le Bien politique*, is soon to appear.

OTHMAR ANDERLE was born in 1907, of Austrian-Styrian parents. He studied history and philosophy at the University of Graz and taught in the public Gymnasium. The war and post-war years forced his retreat to a small mountain village where he now lives and works. Stimulated by Leo Frobenius, at whose Research Institute for Cultural Morphology in Frankfurt a. M., he worked for a time, and by Oswald Spengler, whom he had also known personally, he turned to the problems of an integrated view of history, and has expressed his attitudes toward synthesis and interpretation in a recently published essay on "Thinking in Cultural Terms." He is now writing a comprehensive work which will contain, besides a detailed critique of modern cultural morphology, an examination of the applicability of the morphological method to the science of history. Out of the preparatory work have grown monographs on Toynbee and

Spengler (Frankfort a. M., Humboldt-Verlag), as well as some translations of American literature in the sociology of history, of which one, Sorokin's *Social Philosophies in an Age of Crisis*, won a first prize from the USIS. A book on "General Morphology: An Introduction to the Theory of the Whole and the Gestalt" is in preparation.

FRANÇOIS LE LIONNAIS, who writes in this issue on cybernetics, was born in Paris in 1901. He is a member of the faculty of science at Strasbourg, and of the department of exact and natural sciences of UNESCO. In addition, he serves as advisor on scientific questions for the national museums of France, and is president of the Association of Scientific Writers. He has published *Les Grands Courants de la Pensée mathématique* and *La Science au XX^e siècle*.

RENÉ ROUX is plenipotentiary minister first class and has served as secretary to the embassy at Berne, La Haye and Copenhagen. He took his degree at the Sorbonne in 1946 with two theses: "*La Problème des Argonautes: recherches sur les aspects religieux de la légende* (Paris: Ed. E. de Boccard, 1950) and "*Les œuvres et les missions de deux académiciens-diplomates du XVIII^e siècle: Jean de la Chapelle et Simon de la Loubère*" (which appeared in part in the *Revue d'Histoire Diplomatique*). He is at present editor of that review and teaches courses in geopolitics and diplomatic history at the Institut International d'Etudes et de Recherches diplomatiques au Centre de Politique étrangère, in Paris.

Notes on the Contributors

MIRCEA ELIADE was born in Bucharest in 1907. After acquiring his degree in literature, he went to India, where he studied philosophy at the University of Calcutta. His Ph.D. dissertation, *Yoga: Essai sur les origines de la mystique indienne*, was published in Paris and Bucharest in 1936. Following a number of years of teaching and lecturing, Mr. Eliade was appointed, in 1940, cultural

attaché to the Rumanian Legation in London, a position he later held in Lisbon (1941-44). Since 1945 he has lived in Paris. His recent publications include: *Traité d'histoire des religions* (Payot, 1949); *Le Mythe de l'éternel retour* (NRF, 1949); *Le Chamanisme* (Payot, 1951); and *Images et symboles* (NRF, 1952).

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